United States Department of the Interior

NATIONAL PARK SERVICE
Death Valley National Park
P.O. Box 579
Death Valley CA 92328

June 17, 2004

Dear Friends of Death Valley National Park:

The National Park Service is considering rehabilitating, restoring, and resurfacing approximately 17.2 miles of Mud Canyon / Daylight Pass Road from its southwest terminus in Death Valley National Park, Inyo County California, northeasterly to the park boundary in Nye County, Nevada; and chip sealing previously rehabilitated road sections and parking areas along a 16.5 mile segment of Badwater Road between Furnace Creek and Badwater. The road rehabilitation, restoration, and resurfacing is needed to address extensive raveling (i.e., loosening) of the road surface along the edge of the road and areas of rutting and cracking of the road surface, improve visitor and employee safety, and provide better parking accommodations for tour buses and larger vehicles. The chip sealing is needed to prolong the life of the recently rehabilitated road surfaces. Enclosed is an Environmental Assessment (EA) that details the National Park Service proposal. The EA is also available for public review on the internet at www.nps.gov/deva/pphtml/documents.html

Two alternatives are described and their environmental consequences assessed. Alternative 1 is the no action alternative. Alternative 2 is the National Park Service's preferred alternative and the environmentally preferable alternative.

We welcome your input on the project and our efforts to avoid adverse effects to park resources. The public comment period closes July 17, 2004. If you wish to comment on the EA, you may mail comments to me at the address below, or email your comments to me at DEVA_Superintendent@nps.gov. Please include the phrase "Rehabilitate Mud Canyon / Daylight Pass Road Project" at the top of your comments or in your email subject line.

Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. *If you want us to withhold your name and address, you must state this prominently at the beginning of your comment.* We will make all submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials or organizations or businesses, available for public inspection in their entirety.

Please address your comments to:

James T. Reynolds
Superintendent
Death Valley National Park
Attn: Rehabilitate Mud Canyon / Daylight Pass Road Project
PO Box 579
Death Valley, CA 92328.

/s/ James T. Reynolds
(signed original on file)

Death Valley National Park

National Park Service
U.S. Department of the Interior

Death Valley National Park
California and Nevada

Environmental Assessment

Rehabilitate Mud Canyon / Daylight Pass Road

June 2004

ENVIRONMENTAL ASSESSMENT
Rehabilitate Mud Canyon / Daylight Pass Road

Prepared For:
National Park Service

Prepared By:
engineering-environmental Management, Inc.

Death Valley National Park
California and Nevada

U.S. Department of the Interior
National Park Service

Environmental Assessment
Rehabilitate Mud Canyon / Daylight Pass Road

Death Valley National Park
Inyo County, California and Nye County, Nevada

Summary

The National Park Service is considering rehabilitating, restoring, and resurfacing approximately 17.2 miles of Mud Canyon / Daylight Pass Road from its southwest terminus in Death Valley National Park, Inyo County California, northeasterly to the park boundary in Nye County, Nevada; and chip sealing previously rehabilitated road sections and parking areas along a 16.5-mile segment of Badwater Road between Furnace Creek and Badwater. The road rehabilitation, restoration, and resurfacing is needed to address extensive raveling (i.e., loosening) of the road surface along the edge of the road and areas of rutting and cracking of the road surface, improve visitor and employee safety, and provide better parking accommodations for tour buses and larger vehicles. The chip sealing is needed to prolong the life of the recently rehabilitated road surfaces.

This environmental assessment examines in detail two alternatives: no-action and the National Park Service preferred alternative. The preferred alternative includes paving and repairing raveling edges and soft shoulders; widening the road to meet standard road width requirements; changes to the parking area at the park entrance; improving sight distance at the top of Daylight Pass; improvements to the parking area at the top of Daylight Pass; and improvements in signage and the parking area at Hells Gate (the intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff).

The preferred alternative would have no or negligible impacts on floodplains and wetlands; designated critical habitat, ecologically critical areas, wild and scenic rivers, and other natural areas; geology and geologic hazards; water quality; prime and unique farmland; park operations; socioeconomics and land use; environmental justice; cultural resources (archeological resources, historic structures, ethnographic resources, cultural landscapes); museum objects; Indian trust resources; visual resources; or soundscapes.

The preferred alternative would contribute short-term, negligible, adverse impacts to vegetation; short-term, negligible to minor, adverse impacts to wildlife and threatened and endangered species; short-term, minor, adverse impacts to air quality; and short-term, minor to moderate, adverse impacts to visitor use and experience. There would also be long-term, negligible, adverse impacts to soils and threatened and endangered species.

Beneficial effects of the preferred alternative are as follows: long-term negligible effects on vegetation and wildlife, short- and long-term, negligible to minor effects on threatened and endangered species, long-term minor effects on visitor use and experience, and long-term moderate effects on health and safety.

Notes to Reviewers and Respondents

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. *If you want us to withhold your name and address, you must state this prominently at the beginning of your comment.* We will make all submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials or organizations or businesses, available for public inspection in their entirety.

Please address comments to: Superintendent; Death Valley National Park; Attn: Rehabilitate Mud Canyon / Daylight Pass Road Project; PO Box 579; Death Valley, CA 92328.

E-mail: DEVA_superintendent@nps.gov

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
NEPA	National Environmental Policy Act of 1969, as amended
NPS	National Park Service
NRHP	National Register of Historic Places
SHPO	State Historic Preservation Office
USC	United States Code

INTRODUCTION

PURPOSE AND NEED FOR ACTION

The National Park Service (NPS) is considering rehabilitating, restoring, and resurfacing approximately 17.2 miles of Mud Canyon / Daylight Pass Road from its southwest terminus in Death Valley National Park, Inyo County, California, northeasterly to the park boundary in Nye County, Nevada (figure 1). The purpose of the project is to repave and repair raveling edges and soft shoulders; widen the road to meet standard road width requirements and sustain projected increases in traffic; change the parking area at the park entrance; improve sight distances at the top of Daylight Pass; improve the parking area at the top of Daylight Pass; and improve signage and the parking area at Hells Gate (the intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff). The project also proposes to chip seal previously rehabilitated road sections and parking areas along a 16.5-mile segment of Badwater Road between Furnace Creek and Badwater. The project would provide a safer road with better defined parking areas, thus preserving natural and cultural resources within the project area. This action is needed because:

1. Extensive raveling (i.e., loosening) of the road surface has occurred along the edge in this segment (figure 2).
2. Most of this road segment has areas of severe rutting and cracking.
3. Improvements to the parking areas and Beatty Cutoff road intersection would better accommodate larger vehicles and tour buses and enhance visitor safety in this road segment.
4. Chip sealing would prolong the life of the recently rehabilitated road surfaces.

An environmental assessment analyzes the preferred alternative, other alternatives, and their impacts on the environment. This environmental assessment has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and regulations of the Council on Environmental Quality (40 *Code of Federal Regulations* (CFR) 1508.9); National Park Service Director's Order – 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*; and the National Historic Preservation Act of 1966 (as amended).

PARK PURPOSE, SIGNIFICANCE, AND MISSION

An essential part of the planning process is to understand the purpose, significance, and mission of the park for which this environmental assessment is being prepared.

Park Purpose

Park purpose statements are based on national park legislation, legislative history, and National Park Service policies. The statements reaffirm the reasons for which the national park was set aside as a unit of the national park system, and provide the foundation for national park management and use.

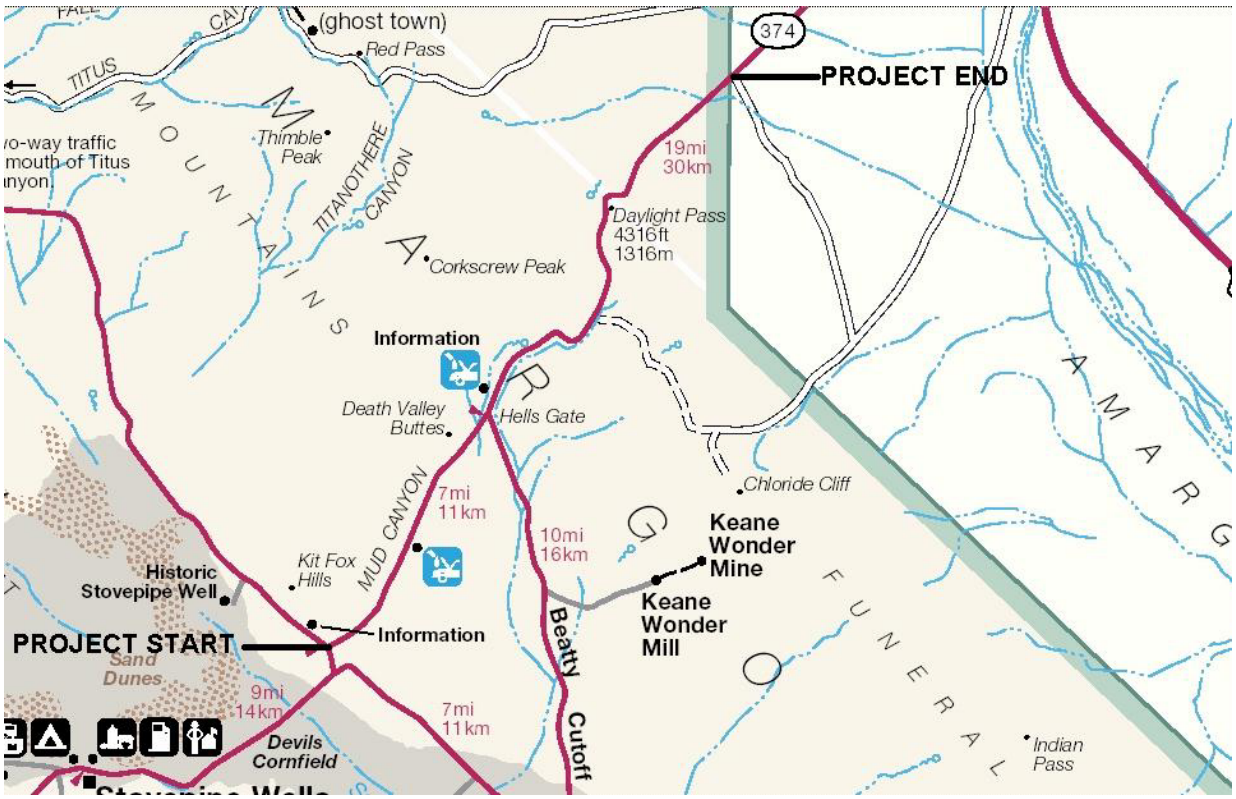

FIGURE 1. PROJECT LOCATION MAP

FIGURE 2. DETAIL OF CURRENT ROAD SURFACE

Preserve the unrivaled scenic, geologic, and natural resources of these unique natural landscapes, while perpetuating significant and diverse ecosystems of the California desert in their natural state. Ensure the maximum protection of wilderness values provided by law.

- Preserve the cultural resources of the California desert associated with prehistoric, historic, and contemporary American Indian culture, patterns of western exploration, settlement, and mining endeavors.

- Provide opportunities for compatible public outdoor recreation and promote the public's understanding and appreciation of the California desert by interpreting the natural and cultural resources.

- Retain and enhance opportunities for scientific research in undisturbed ecosystems.

Park Significance

Park significance statements capture the essence of the national park's importance to the natural and cultural heritage of the United States of America. Significance statements do not inventory park resources; rather, they describe the park's distinctiveness and help place the park within the regional, national, and international context. Defining park significance helps park managers make decisions that preserve the resources and values necessary to accomplish the purpose of the national park.

- Death Valley National Park contains the lowest point in North America at 282 feet below sea level. The valley floor receives the least precipitation in the United States (average 1.84 inches per year) and is the site of the nation's highest and the world's second-highest recorded temperature (134 degrees Fahrenheit or 57 degrees Celsius).

- Death Valley National Park is world renowned for its exposed, complex, and diverse geology and tectonics, and for its unusual geologic features, providing a natural geologic museum that represents a substantial portion of the earth's history.

- Death Valley has been the continuous home of American Indians from prehistoric cultures to the present day Timbisha Shoshone Tribe.

- The extremely colorful, complex, and highly visible geology and steep, rugged mountains and canyons provide some of the most dramatic visual landscapes in the United States.

- Death Valley National Park contains one of the nation's most diverse and significant fossil records and most continuous volcanic history.

- Death Valley National Park contains five major sand dune systems representing all types of dune structures, making it one of the only places on earth where this variety of dune types occur in such close proximity. It also contains the highest dunes in California—Eureka Sand Dunes.

- Death Valley National Park is one of the largest expanses of protected warm desert in the world. Ninety-five percent of the park is designated wilderness, providing unique opportunities for quiet, solitude, and primitive adventure in an extreme desert ecosystem.

- Contrary to many visitors' first impression, Death Valley National Park's natural resources are extremely diverse, containing a large variety of plant species and community types. The area preserves large expanses of creosote bush valleys and other vegetation typical of the Mojave Desert. Extreme conditions and isolation provide habitat for an unusually high number of plant and animal species that are highly adapted to these conditions.

- Death Valley National Park has an extensive and well-preserved mining history representing over 100 years of mining technology.

- Death Valley National Park contains an unusually high number of well-preserved archeological sites, including rock art and alignments.

- Scotty's Castle, with its architectural style, quality, and priceless collection of antiques and art objects, built in a remote, isolated desert location in the early 1900s, is an icon that has immense public appeal.

Park Mission

Park purpose describes the specific reason the park was established. Park significance is the distinctive features that make the park different from any other. Together, purpose and significance lead to a concise statement—the mission of the park. Park mission statements describe conditions that exist when the legislative intent for the park is being met.

Death Valley National Park dedicates itself to protecting significant desert features that provide world class scenic, scientific, and educational opportunities for visitors and academics to explore and study.

PROJECT BACKGROUND, PREVIOUS PLANNING, SCOPING, AND VALUE ANALYSIS

The segment of Mud Canyon / Daylight Pass Road proposed for rehabilitation, restoration, and resurfacing begins at the intersection with Bonnie Claire Road and ends at the park boundary where the road continues as Nevada Highway 374. Mud Canyon / Daylight Pass Road is one of seven paved highway entrances into Death Valley National Park. In 1995, the annual average daily traffic for this road was 336 vehicles (NPS 2000).

Previous Planning

The proposed Mud Canyon / Daylight Pass Road rehabilitation, restoration, and resurfacing project complies with the primary management objectives for Death Valley National Park, as stated in the approved *General Management Plan* (NPS 2002). The *General Management Plan* objectives are to protect cultural and natural resources, enhancing the visitor experience while providing for safe and efficient accommodation of park visitors and changing visitor use patterns (e.g., the increasing numbers of buses entering the park).

In 2000, an environmental assessment and Finding of No Significant Impact were prepared for the proposed road reconstruction of three dangerous curves on Daylight Pass Road to provide widening and realignment of the three curves. These curves were located approximately 3.0 to 3.5 miles, 5.2 to 5.5 miles, and 9.6 to 10.3 miles from the intersection with Bonnie Claire Road. Subsequently, the road was realigned in these areas in 2001. The purpose of the curve realignment project was to protect natural and cultural resources of the park, providing access to the park, and enjoyment of park resources by keeping the park road open to normal vehicle travel as a paved highway (NPS 2000). The proposed Mud Canyon / Daylight Pass Road rehabilitation, restoration, and resurfacing project is consistent with the overall effort to provide safe travel on this road for the public, park visitors, employees, and their families.

Scoping

Scoping is an effort to involve agencies and the general public in determining issues to be addressed in this environmental assessment. Scoping is used to determine important issues to be given detailed analysis in the environmental assessment and eliminate issues not requiring detailed analysis; allocates assignments among the interdisciplinary team members and/or other participating agencies; identifies related projects and associated documents; identifies permits, surveys, consultations, etc., required by other agencies; and creates a schedule that allows adequate time to prepare and distribute the environmental assessment for public review and comment before a final decision is made. Scoping includes any interested agency, or any agency with jurisdiction by law or expertise (including the State Historic Preservation Office (SHPO) and American Indian tribes) to obtain early input.

To begin the planning process, staff of Death Valley National Park and resource professionals of the National Park Service, Denver Service Center, conducted internal scoping. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the proposed action to other planning efforts at Death Valley National Park.

A press release (appendix A) initiating scoping and describing the proposed action was issued on January 22, 2004. No comments were received on the project. The public and American Indian groups traditionally associated with the lands of Death Valley National Park will also have an opportunity to review and comment on this environmental assessment.

ISSUES AND IMPACT TOPICS

Issues

Issues and concerns affecting this proposal were identified from past National Park Service planning efforts and internal and external scoping. The issues and concerns identified in the planning stage allowed this environmental assessment to focus on those impact topics that have the greatest potential to be affected by the proposed project activities. The major issues are the conformance of this proposal with the Death Valley *General Management Plan*. Natural resource issues were identified, including potential impacts to soils, vegetation, wildlife, and special-status species. Other impacts were identified in association with visitor experience and health and safety.

NEPA calls for an examination of the impacts on all components of affected ecosystems and is the charter for the protection of the environment. NEPA requires federal agencies to use all practicable means to restore and enhance the quality of the human environment and to avoid and minimize any possible adverse effects of their actions upon the environment. The preferred alternative was developed to minimize the impact to natural resources and the visitor experience, while protecting health and safety. Measures to prevent the introduction of invasive species and programs to reclaim impacted habitat would be implemented. Issues and mitigation measures are included in the rationale for selection of impact topics for further consideration or for dismissal from further consideration discussed below.

Derivation of Impact Topics

Specific impact topics were developed for discussion focus and to allow comparison of the environmental consequences of each alternative. These impact topics were identified based on federal laws, regulations, and Executive Orders; 2001 *NPS Management Policies*; and National Park Service knowledge of limited or easily impacted resources. Regulatory citations for each impact topic are briefly discussed and included in a section entitled “Regulatory Citations” at the end of this document. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

Impact Topics Selected for Detailed Analysis

Soils

Under the no-action alternative there would be no disturbance to soils. The proposed action involves ground-disturbing activities on previously undisturbed areas and soils would be impacted through disturbance, redistribution, and potential loss through erosion. Soils are, therefore, addressed as an impact topic in the environmental assessment.

Vegetation

National Park Service policy is to protect the components and processes of naturally occurring biotic communities, including the natural abundance, diversity, and ecological integrity of plants and animals (*NPS Management Policies 2001*). Road rehabilitation would involve ground-disturbing activities with the potential to disturb, remove, and eliminate vegetation; therefore, this impact topic is addressed in detail in the environmental assessment.

Wildlife

National Park Service policy is to protect the components and processes of naturally occurring biotic communities, including the natural abundance, diversity, and ecological integrity of plants and animals (*NPS Management Policies 2001*). Road rehabilitation would involve increased human activity, noise and ground-disturbing activities with the potential to disturb, temporarily or permanently displace, wildlife or their habitat. The construction could also increase wildlife mortalities through killing outright or increased susceptibility to predation or competitive stress due to relocation. Therefore, this impact topic is addressed in detail in the environmental assessment.

Special-Status Species

The Endangered Species Act (1973), as amended, requires an examination of impacts on all federally listed threatened or endangered species. National Park Service policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. Such species could be affected by the proposed action through increased noise and human activity, temporary or permanent relocation, and outright kills or increased predation or competitive stress. Therefore, this impact topic is addressed in the environmental assessment.

Visitor Experience

Visitor experience is affected by the poor condition of the roads, the lack of organized parking at the park entrance, and confusion at the intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff. Under the proposed action, short-term effects to visitor use and experience would be expected during project construction in the form of traffic delays. Therefore, this topic is addressed in the environmental assessment.

Health and Safety

Under the no-action alternative, public safety would continue to be impacted by road conditions, confusion at the intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff, and limited sight distance when accessing the parking area at Daylight Pass. The preferred alternative would create the potential for public safety issues during construction, but the road improvements are expected to result in safety improvements. Public safety would be affected by selection of either alternative; therefore, health and safety is addressed as an impact topic in this environmental assessment.

Impacts Dismissed from Detailed Analysis

Wetlands and Floodplains

Executive Order 11988 (*Floodplain Management*) requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. *NPS Management Policies*, Director's Order – 2: *Planning Guidelines*, and Director's Order – 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* provide guidelines for proposed actions in floodplains. Executive Order 11990 (*Protection of Wetlands*) requires an examination of impacts to wetlands. There are no wetlands within the project area as defined by the U.S. Army Corps of Engineers; however the project crosses several drainages that constitute waters of the United States subject to jurisdiction by the U.S. Army Corps of Engineers under the Clean Water Act. The existing road from Daylight Pass to the intersection with Bonnie Claire Road is constructed on either an alluvial fan (primarily from Hells Gate to the intersection with Bonnie Claire Road) or in the bottom of washes that drain the surrounding hills (leading up to Daylight Pass). Although these washes can carry a tremendous amount of flow in a storm event, the existing road would be only slightly modified and the changes to the floodplains as a result of this project would be negligible (NPS 2004a). Therefore, wetlands and floodplains were dismissed as impact topics.

Designated Critical Habitat, Ecologically Critical Areas, Wild and Scenic Rivers, Other Unique Natural Areas

No areas within the project corridor are designated as critical habitat or ecologically critical (NPS 2002), nor are there any existing or potential wild and scenic rivers within the project area (NPS 2004). Death Valley is an important natural area, but the proposed action would not threaten the associated qualities and resources that make the park unique. This topic was, therefore, dismissed from detailed analysis.

Geology and Geologic Hazards

Although ground-disturbing activities would occur under the preferred alternative, impacts to the geology in the project area are not anticipated. Nor would geologic hazards (e.g., faults and seismic activity such as earthquakes) be anticipated to affect the project. Faults do exist within the road corridor, but would not be expected to exhibit activity during project construction. Long-term road use would be impacted by fault activity under both the no-action and preferred alternative. Such impacts are not predictable or manageable. Since, geology and geologic hazards would not be expected to impact project activities, therefore, this topic was dismissed from detailed analysis.

Air Quality

The 1963 Clean Air Act, as amended (42 *United States Code* (USC) 7401 *et seq.*), requires land managers to protect air quality. Section 118 of the Clean Air Act requires parks to meet all federal, state, and local air pollution standards. Section 176(c) of the 1963 Clean Air Act requires

all federal activities and projects to conform to state air quality implementation plans to attain and maintain national ambient air quality standards. *NPS Management Policies 2001* addresses the need to analyze potential impacts to air quality during park planning. Death Valley National Park is classified as a Class II "floor" air quality area under the Clean Air Act, as amended, which means it may never be redesignated to Class III (NPS 2002).

The project area is located in the Great Basin Unified Air Pollution Control District, as established by the state of California. This district is classified as a California state non-attainment area for particulate matter (fine dust) less than 10 microns in diameter.

The general trend in upper air movement carries pollutants to Death Valley National Park from metropolitan areas, industrial areas, and transportation corridors located to the west. In the summer, surface winds are from the southwest, where sources that contribute to pollution in the park include major population centers, industrial areas, and a dry lake bed. In winter, surface winds come from the northeast. Because these winds bring an air mass that originates in less developed areas, the air quality of Death Valley National Park is generally better in the winter (NPS 2003b).

Should the preferred alternative be selected, local air quality would be temporarily affected by dust and construction vehicle emissions. Hauling material and operating equipment during the construction period would result in increased vehicle exhaust and emissions. Hydrocarbons, nitrogen oxide, and sulfur dioxide emissions would be expected to be rapidly dissipated.

Fugitive dust plumes from construction equipment would intermittently increase airborne particulates in the area near the project site, but loading rates are not expected to be considerable. To mitigate these effects, such activity would be coupled with water sprinkling to reduce dust.

Overall, there would be a slight and temporary degradation of local air quality due to dust generated from construction activities and emissions from construction equipment. These effects would last only as long as construction occurred; impacts would be negligible and short term. Therefore, air quality was dismissed as an impact topic in this document.

Water Quality

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters; to enhance the quality of water resources; and to prevent, control, and abate water pollution. *NPS Management Policies* provide direction for the preservation, use, and quality of water in national park units. There are no perennial streams or springs within the project corridor. Mitigation measures would be implemented for sediment control. Therefore, there are no anticipated impacts to water quality from this project and water quality was dismissed from detailed analysis.

Prime and Unique Farmland

In 1980, the Council on Environmental Quality directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture, Natural Resources Conservation Service. Prime or unique farmland is defined as soil, which particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. There are no areas or soils where unique crops are produced within the park boundary; therefore, this topic was dismissed from detailed analysis.

Park Operations

Effects on park operations from the proposed action would be negligible. Increased staff or additional equipment would not be required, nor would additional maintenance activities. Some staff commuting from Beatty may experience short delays as part of traffic management during the road construction activities; however, such delays would be less than 30 minutes and would be of negligible impact to park operations. Therefore, park operations have been dismissed as an impact topic.

Socioeconomic Environment and Land Use

Both the no-action or preferred alternative would not change local or regional land use, nor would it appreciably affect local businesses outside Death Valley National Park. Implementation of the preferred alternative could provide a negligible beneficial impact to the economies of Inyo and Nye Counties (e.g., increased employment opportunities for the construction work force and revenues for local businesses and government related to construction activity). The duration of construction activity for the preferred alternative is approximately nine months, beginning in approximately October 2004 and running through approximately May 2005. The exact beginning date is contingent on the availability of funding. Benefits to the local economy would be temporary, lasting only during construction, and negligible overall. In addition, improvements on Mud Canyon / Daylight Pass Road would not affect concessions within the park. Therefore, socioeconomics was dismissed from detailed analysis.

Environmental Justice

Executive Order 12898 (*General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)*, requires all agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations or communities. No alternative under consideration would have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's *Draft Environmental Justice Guidance* (July 1996). Environmental justice was, therefore, dismissed from detailed analysis.

Archeological Resources and Historic Structures

Previous archeological resource inventories in and near the project area did not locate any archeological sites, but they did identify historic roadbeds and a stone wall, none of which are expected to be affected by the current project.

A cultural resource inventory was completed within the Mud Canyon / Daylight Pass Road corridor from the intersection with Bonnie Claire Road to the park boundary in 2003 (Turner 2003). Archeologists identified seven sites near or in the project area. All sites within the project area have been recorded (or will be recorded by the time the project occurs). Of the sites recorded, only one, DEVA 2003-14 (a multi-component site in the vicinity of Daylight Pass), would likely be actively affected by the project. Work would be done in a small previously disturbed area currently used for day-use parking along the eastern edge of the site. Moreover, the site includes the foundation of a Civilian Conservation Corps entrance station, which would be removed. Previous archeological inventories in and near the project area identified historic roadbeds and a stone wall, but no archeological resources. However, the historic roadbed and stone wall are not likely to be affected by the project because they are located outside the area of potential effect (Turner 2003).

The archeological inventory report from the 2003 survey recommended clearance for all sites except DEVA 2003-14, and states that "[p]roject personnel have been alerted to the issues surrounding DEVA 2003-14. . . It has been stipulated, and project managers have agreed, that an archeologist would be present onsite, monitoring all work in the area of DEVA 2003-14" (Turner 2003). The goal of monitoring is to ensure that no important information is lost. Monitoring would ensure that all activities take place within the area of potential effect defined for the project and do not go outside of that boundary. In addition, monitoring would ensure that any previously unknown archeological resource that may be uncovered during the work is properly recorded. Consultation with the California SHPO and the Timbisha Shoshone Tribe would occur before any work is done on the site. These activities mitigate potential adverse effects to archeological resources. Any effects to archeological resources and/or historic resources would be negligible under NEPA and there would be no adverse effect under Advisory Council for Historic Preservation guidelines. Historic structures (roadbeds and stone walls) would not be affected. Therefore, archeological resources and historic structures are dismissed from detailed analysis.

Should unknown cultural resources be encountered during construction activities, work would be halted in the discovery area and the park would consult according to 36 CFR 800.13 and, as appropriate, provisions of the Native American Graves Protection and Repatriation Act of 1990.

Ethnographic Resources

Ethnographic resources are defined by the National Park Service as "subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users" (Director's Order – 28). American Indian tribes traditionally associated with Death Valley National Park include the Western Shoshone (also

known as the Panamint, Koso, or Timbisha Shoshone) in the central and northern half of the park, the Kawaiisu in the southern half, and Southern Paiute in the extreme southern end of the valley. The National Park Service would consult with these tribes and copies of the environmental assessment would be forwarded to each affiliated tribe or group for review or comment. If subsequent issues or concerns are identified, appropriate consultations would be undertaken. Because it is unlikely that ethnographic resources would be affected, and because appropriate steps would be taken to protect any human remains, funerary objects, sacred objects, or objects of cultural patrimony inadvertently discovered, ethnographic resources was dismissed from detailed analysis.

Cultural Landscapes

According to the National Park Service's *Cultural Resource Management Guideline* (Director's Order – 28), a cultural landscape is "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values."

Many cultural landscapes exist within the park. Cultural landscape studies have been completed at Cow Camp, Wildrose, and Hungry Bill's Ranch. Landscapes associated with Scotty's Castle, Lower Vine Ranch, the Salt Tram in Saline Valley, and the Civilian Conservation Corps-era administration buildings are considered particularly important. A cultural landscape study is ongoing at Scotty's Castle. Other cultural landscapes include the Timbisha Shoshone village, various mining sites, Harmony Borax Works, and cultivated orchards, gardens, and groves related to ranching and resorts. None of these landscapes are within the project area; therefore, this topic was dismissed from detailed analysis (NPS 2002).

Museum Objects

Museum collections include historic artifacts, natural specimens, and archival and manuscript material contained in collections held by the park in designated storage or display areas. They may be threatened by fire, vandalism, natural disasters, and careless acts. The preservation of museum collections is an ongoing process of preventative conservation, supplemented by conservation treatment when necessary. The primary goal is preservation of artifacts in as stable condition as possible to prevent damage and minimize deterioration. The proposed activities along Mud Canyon / Daylight Pass Road would not affect any designated storage or display areas for museum objects of Death Valley National Park; therefore, museum objects was dismissed as an impact topic.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United Sates to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect

to American Indian and Alaska Native tribes. There are no Indian trust resources in Death Valley National Park. The lands comprising the park are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, Indian trust resources was dismissed as an impact topic in this environmental assessment.

Visual Resources

Visual resources would be affected by the proposed project; however, the effects would be short term, localized, and negligible. Visual impacts would occur during construction and to areas close to the road construction. The scenic viewscapes for which Death Valley National Park is renowned would not be affected by the proposed project. Therefore, visual resources was dismissed from further analysis.

Soundscapes

In accordance with *NPS Management Policies 2001* and Director's Order – 47: *Sound Preservation and Noise Management*, an important part of the National Park Service mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among National Park Service units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas. Noise associated with road improvements would be short term and localized, and construction activities would be scheduled so as to minimize effects on visitor experience. Road improvements would not result in a measurable increase in traffic noise. Consideration of noise impacts on threatened, endangered, and special-concern species are addressed under that impact topic. Therefore, noise was dismissed from detailed analysis as a separate topic.

PREFERRED ALTERNATIVE AND OTHER ALTERNATIVES

INTRODUCTION

The alternatives section describes two management alternatives for Mud Canyon / Daylight Pass Road at Death Valley National Park. Alternatives for this project were developed to resolve visitor experience and park operations issues.

The no-action alternative describes the action of continuing the present management operation and condition, it does not imply or direct discontinuing the present action or removing existing uses, developments, or facilities. The no-action alternative provides a basis for comparing the management direction and environmental consequences of the preferred alternative. Should the no-action alternative be selected, the National Park Service would respond to future needs and conditions associated with Mud Canyon / Daylight Pass Road at Death Valley National Park without major actions or changes in course.

The preferred alternative presents the National Park Service proposed action and defines the rationale for the action in terms of resource protection and management, visitor and operational use, costs, and other applicable factors.

Additional alternatives considered and dismissed from detailed analysis are also discussed in this section. A summary table comparing the environmental consequences of each alternative is presented at the end of the alternatives section.

ALTERNATIVE 1: NO-ACTION ALTERNATIVE

The no-action alternative would be the continuation of existing conditions for Mud Canyon / Daylight Pass Road. Should the no-action alternative be selected, the National Park Service would respond to future needs and conditions associated with Mud Canyon / Daylight Pass Road in Death Valley National Park without major actions or changes in the present course. Raveling (loosening) of the road edge would continue and the road surface would continue to have areas of rutting and cracking. The intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff would continue to cause confusion to park visitors and impact visitor safety. The limited sight distance in turning into or from the Daylight Pass parking area would continue to create a potential for accidents. Improvements to the parking areas that would provide for better universal accessibility, provide better accommodation of larger vehicles and tour buses and enhance visitor safety would not be undertaken and universal access and accommodations for tour buses and larger vehicles would continue to be impeded.

The no-action alternative does not preclude short-term, minor repair or improvement activities for the road that would be part of routine maintenance for continuing operation of the road.

ALTERNATIVE 2: PREFERRED ALTERNATIVE

Alternative 2 is the National Park Service preferred alternative. The preferred alternative presents the National Park Service's proposed action and defines the rationale for the action in terms of resource protection and management, visitor and operational use, and costs. The preferred alternative meets the Death Valley National Park planning objective of providing a safe and adequate transportation route through this portion of Death Valley National Park and opportunities for visitors to stop and experience the park along the route. The preferred alternative would be designed for a 20-year service life, meeting current and anticipated future needs during that period.

Roadway Resurfacing

Under the preferred alternative, improvements to Mud Canyon / Daylight Pass Road would occur during the 2004 – 2005 winter construction season. The total anticipated length of the project would be 17.2 miles. The existing paved width of the roadway varies from 20- to 22-feet wide, with 2- to 15-foot-wide unpaved shoulders. The preferred alternative would widen the roadway width to a standard 24-foot width (two 11-foot lanes with 1-foot shoulders). The 24-foot-wide road would be designed to remain within the existing graded shoulders, except at four locations where minor shifts in the roadway would be necessary to improve sight distance and drainage, and minimize impacts to existing terrain. These locations include:

1. A realignment that shifts the road approximately 10 feet west beginning approximately 250 feet south of Daylight Pass parking area and ending 1,580 feet north of Daylight Pass parking area. A paved ditch and culvert would also be constructed.
2. A drainage repair approximately 4,224 feet east of Hells Gate parking area, consisting of the removal of approximately 360 feet of existing gabion fencing on the west side of the road and regrading a drainage swale on both the east and west edges of Mud Canyon Road.
3. A drainage repair approximately 5,280 feet east of Hells Gate parking area that would require installation of 200 feet of gabion slope mattress on the west edge to correct improper drainage and prevent erosion of the road embankment.
4. A drainage repair near the east end of the Hells Gate parking area at the east edge of the road that would include the installation of a concrete barrier and riprap to minimize erosion and undermining of the road edge.

The existing asphalt section and a predetermined portion of the existing base material would be uniformly pulverized, blended together, and re-laid to produce the new stabilized road base. Paving would occur as soon as possible after the placement of the new road base, to prevent raveling that may result if the unpaved layer is subjected to traffic for too long. Paved ditches would be modified or replaced in four areas, and new paved ditches would be constructed in five areas for better control of drainage and to reduce erosion.

In order to complete the road work, existing gabion baskets would need to be removed and roadside berms would be regraded for a 0.1-mile segment beginning at approximately 8 miles from the intersection with Bonnie Claire Road. Roadside berms on the section of road

between Hells Gate and the park boundary would be flattened and smoothed to provide additional material to blend with the higher road surface and make the berms less visually obtrusive.

No resurfacing work would be performed on the three curves that were realigned in 2001. These curves were widened to 26 feet as a result of the work in 2001. Because the resurfacing under this alternative would create a 24-foot-wide road surface, some blending would be required where the new road surface meets the previously realigned curve portions. The pavement in the previously realigned sections would be striped to match the 11-foot travel lane widths of the remainder of the road.

Park Entrance Improvements

A small parking area large enough to accommodate two recreational vehicles or six cars would be constructed at the park entrance. It would be located approximately 200 feet from the park boundary, and would be paved and have limited curbs and gutters at the entrance sign area, as well as a colored concrete or soil stabilized sidewalk. Boulders would be placed along the parking edge to control disturbance and unauthorized access beyond. Some minor grading might be necessary beyond the parking area limits to improve drainage. A new entry sign would be installed, while the existing cattle guard (figure 3) would be replaced in-kind with a wider guard to span the wider road section. The cattle guard is necessary for burro (*Equus asinus*) control. The cattle guard would have bars spaced in such a way that it would not trap tortoise (12 centimeter spacing). The new cattle guard would be sloped to allow trapped animals to move out of the ditch. Periodic maintenance would be performed to ensure that the cattle guard remains open and clear of debris. Compacted soils in the existing parking area would be loosened and the area allowed to return to its native condition.

Daylight Pass Improvements

The turnout area would be reconfigured to improve visibility for eastbound traffic, westbound traffic, and traffic flow into and out of the turnout (figure 4). The roadway alignment would be shifted to the west by approximately 12 feet to avoid cutting the existing slope on the south side of the roadway, in effect widening the curve to provide a straighter section with better sight distance. A paved ditch would be constructed along the east side of the new roadway (in the area of the existing eastbound lane). The parking area limits would remain the same; however, the parking area itself would be smaller as a result of the roadway realignment. The parking area would remain gravel, but 8-foot-wide paved aprons would be installed approximately 10 to 12 feet from each end (east and west) of the turnout area at the entrance points. The access points would be separated by a rock-lined island to help define and control access. Topsoil from the realignment windrow and from existing roadside berms would be placed within the island.

FIGURE 3. CATTLE GUARD AT PARK ENTRANCE

FIGURE 4. DAYLIGHT PASS TURNOUT AND PARKING AREA

Drainage on the east side of Daylight Pass would be conveyed from the south side to the north side of the road through a culvert to be installed under the roadway. The culvert would be placed on grade with natural ground at both the inlet and outlet ends, and riprap would be placed at the culvert outlet to prevent erosion along historic Rhyolite/Skidoo Road.

Mixing Table Borrow Area Regrading

The Mixing Table area (figure 5) would be used as a staging/storage area for the contractor. Since equipment would be staged in this area, the equipment would be available to perform some regrading of previously disturbed areas of the mixing table. Portions of the existing borrow pit at the Mixing Table area (approximately one acre) would be regraded to soften edges and recontour the borrow area (figure 6). Topsoil would not be placed on the site, and revegetation would be achieved by allowing the area to reseed itself. The material piles and asphalt roadway at the site would not be reclaimed.

FIGURE 5. STAGING / STORAGE AREA AT THE MIXING TABLE

FIGURE 6. MIXING TABLE BORROW AREA TO BE RECLAIMED

Hells Gate Improvements

Hells Gate is the intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff (see figure 1). The "Y" intersection (figure 7) would be improved by restriping the road and providing better signage. Road edge striping would be added to better delineate the intersection and the area between the two arms of the intersection would be paved. Directional signs would be relocated to provide better warning of the upcoming intersection. The acceleration lane from the Beatty Cutoff to eastbound Mud Canyon / Daylight Pass Road would be lengthened and made more distinctive with roadway striping. Approximately 150 feet of buried concrete barrier would be added on the east side, adjacent to the acceleration lane, to help control drainage and reduce pavement undercutting. Pedestrian use signs would be added to all three legs of the intersection to warn motorists they are approaching a pedestrian area. All of these efforts would provide enhanced delineation of the intersection at Hells Gate. These improvements would not expand the current road corridor (see figure 7).

Some improvements would also be made to the parking area at Hells Gate. It would be repaved and an island would be painted to keep people from parking vehicles too close to the road. A colored concrete or soils-stabilized walkway with a concrete accessible ramp would be constructed to provide universal access to the information kiosk and restrooms. The concrete slab for the kiosk will be removed and replaced with colored concrete. Trash receptacles would be removed. The sloped area behind the restroom would be regraded to reduce the slope steepness to blend and prevent erosion.

FIGURE 7. INTERSECTION AT HELLS GATE

Mud Canyon / Daylight Pass Road and Bonnie Claire Road Intersection Improvements

The stop sign at this intersection would be replaced with one with a reflective surface. Rumble strips would be created to warn motorists of the stop ahead. A wider apron would be paved to cover areas where motorists tend to cut the turns from Bonnie Claire Road onto Mud Canyon/ Daylight Pass Road (figure 8).

Surface Treatments

Chip sealing would be applied to at least 17 miles of Badwater Road and Badwater parking area. To begin chip sealing, an asphalt binder would be sprayed on the pavement, then immediately covered by a single layer of uniformly sized chips. The new surface treatment would be rolled to set the aggregate, and then broomed to remove any loose chips. The road would be opened to traffic after sweeping or may be opened to slow moving traffic almost immediately. Chips consist of aggregate as close to single size as possible. Chip seal work would occur only on the road surface and would not create or require disturbance outside of the road prism. The work must comply with Federal Standard Specification for Construction of Roads and Bridges on Federal Highway Projects FP-96.

FIGURE 8. BONNIE CLAIRE ROAD INTERSECTION

Staging Area

The stockpile area of Death Valley National Park (the Mixing Table) would be used as the contractor staging and stockpile area. Excess topsoil would also be stored at the Mixing Table. If necessary, the Sunset Campground overflow near Furnace Creek would be used to supplement the Mixing Table staging area.

Sustainability

The National Park Service has adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives of sustainability are to design park facilities to minimize adverse effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage biodiversity; to construct and retrofit facilities using energy efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment. The preferred alternative subscribes to and supports the practice of sustainable planning, design, and use of Mud Canyon / Daylight Pass Road.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

In accordance with Director's Order 12, the National Park Service is required to identify the "environmentally preferred alternative" in all environmental documents, including environmental assessments. The environmentally preferred alternative is determined by applying the criteria suggested in NEPA, which is guided by the Council on Environmental Quality. The Council on Environmental Quality provides direction that "[t]he environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed in section 101 of NEPA, which considers:

1. fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations
2. assuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings
3. attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences
4. preserving important historic, cultural, and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice
5. achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities
6. enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources" (NEPA, section 101)"

The no-action alternative is not the environmentally preferred alternative because it would not:

- address the deteriorating road surface and poor visibility that creates safety hazards for employees and visitors (criteria 2, 3, and 5 not met)
- reduce the need for road maintenance that consumes depletable resources (criteria 1 and 6 not met)
- ensure access to park facilities (e.g., wayside exhibits) for all individuals (criteria 2 and 4 not met)
- provide for restoration of natural areas (e.g., the Mixing Table) or enhancements to measures for protecting cultural resources (e.g., the old Rhyolite/Skidoo Road) (criteria 1, 2, 3, 4, and 5 not met)

The environmentally preferred alternative in this environmental assessment is the National Park Service preferred alternative. This alternative was selected based on the following criteria:

- protects public and employee health, safety, and welfare by addressing safety concerns associated with a deteriorated road surface and poor visibility (NEPA criteria 2, 3, and 5)
- prevents loss of cultural resources by improving drainage controls near the old Rhyolite/Skidoo Road and provides for natural recovery of previously disturbed areas (NEPA criteria 1, 2, 3, 4, and 5)

- improves operations efficiency and sustainability by reducing the need for ongoing road maintenance and the consumption of depletable resources associated with such maintenance (criteria 1 and 6)

MITIGATION MEASURES

Mitigation measures are presented as part of the preferred alternative. These actions have been developed to lessen the adverse effects of the preferred alternative.

General Measures

- The National Park Service project manager would ensure that the project remains confined within the parameters established in the compliance documents and that mitigation measures are properly implemented.

- The project monitor would conspicuously stake, flag, or mark work area boundaries (including the new access roads, realignments, and parking/turnout areas) to minimize surface disturbance to the surrounding habitat. Material stockpiling, machinery storage, and vehicle parking would only be permitted in designated areas.

- All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the work area boundaries. This does not exclude necessary temporary structures such as erosion control fencing.

- All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion. Any asphalt surfaces damaged due to work on the project would be repaired to original condition. All demolition debris would be removed from the project site, including all visible concrete and metal pieces.

- Contractors would be required to properly maintain construction equipment (i.e., mufflers) to minimize noise from use of the equipment.

- A hazardous spill plan would be in place, stating what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials, etc.

- All equipment on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be checked daily.

- Best management practices for drainage and sediment control, as identified and utilized by the Federal Highway Administration and the National Park Service, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss

and sedimentation in drainage areas. Use of best management practices in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements:

  - keeping disturbed areas as small as practical to minimize exposed soil and the potential for erosion
  - locating waste and excess excavated materials outside of drainages to avoid sedimentation
  - installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) prior to construction
  - conducting regular site inspections during the construction period to ensure that erosion-control measures were properly installed and are functioning effectively.
  - storing, using, and disposing of chemicals, fuels, and other toxic materials in a proper manner

- Erosion control measures would be implemented to minimize minor and short-term impacts to water quality. Sediment traps, erosion check structures, and/or filters would be considered.

- Provisions for traffic delays shorter than 30 minutes would be made during employee commute times and for school buses that travel the road.

Soils

- Erosion and sediment control would be required (see "General Measures").

- Disturbed soils would be roughened and/or scarified to promote natural seed establishment.

- Excess soil material that is infested with the invasive species *Halogeton glomeratus* would be placed at the Mixing Table, in areas identified by the park. This species has been identified in the construction area, and is a serious threat to the park.

Vegetation

- Disturbed areas, including roadside berms, abandoned parking areas and turnouts, as well as designated portions of the Mixing Table, would be allowed to return to natural conditions with minor treatments.

- Ground surface treatment would include grading to natural contours, as well as roughing/scarification and vertical mulching to promote natural seeding.

- Disturbed areas would be monitored after construction to determine if remedial actions, such as the installation of erosion-control structures or non-native plant species control, are necessary.

- In an effort to avoid introduction of non-native/noxious plant species, no imported topsoil or hay bales would be used during revegetation. On a case-by-case basis, the following materials may be used for any erosion-control dams that may be necessary: certified weed-free rice straw, cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales.

- Undesirable plant species would be controlled in high-priority areas and other undesirable species would be monitored and controlled, as necessary. To prevent the introduction and minimize the spread of non-native vegetation and noxious weeds, the following measures would be implemented during construction:

  - Minimize soil disturbance.
  - Mapping and pretreatment of noxious weeds (as recognized by the county and/or the state) may take place prior to construction and would be limited to the designated areas of construction.
  - Pressure wash and/or steam clean all construction equipment to ensure that all equipment, machinery, rocks, gravel, or other materials are cleaned and weed free before entering Death Valley National Park.
  - All construction equipment transporting material outside the construction limits shall be brushed down after every drive.
  - Cover all haul trucks bringing asphalt or other fill materials from outside the park to prevent seed transport.
  - Limit vehicle parking to existing roadways, parking lots, or access routes.
  - Limit disturbance to roadsides and culvert areas, including limiting equipment to the roadbed area—no machinery or equipment should access areas outside work area boundaries.
  - Obtain all fill, rock, or additional topsoil from the project area, if possible. If not possible, obtaining weed-free sources from National Park Service approved sources outside the park would be required.
  - Monitor disturbed areas for up to 3 years following construction to identify growth of noxious weeds or non-native vegetation. Treatment of non-native vegetation would be completed in accordance with National Park Service–13, *Integrated Pest Management Guidelines*.

Wildlife / Special-Status Species

- The clearing limits (construction limits) outside of the existing road prism would be clearly marked or flagged prior to construction. All construction activities would be located within previously disturbed areas and staging, storage, and equipment parking areas would be fenced, if necessary.

To protect desert tortoises (*Gopherus agassizii*) the following measures would be implemented:

- Only qualified and/or authorized biologists, as appropriate, would be utilized for oversight of all activities within the roadway corridor. An individual would be designated the field contact representative to oversee project compliance and coordination.

- Mitigation measures that would be implemented to further minimize adverse effects to the desert tortoise, including habitat loss, degradation, and fragmentation; direct mortality from construction activity; common raven (*Corvus corax*) predation; and continued vehicle use on the project road are presented as follows:

  - An individual would be designated the project monitor to oversee project compliance and coordination. The project monitor would coordinate with the U.S. Fish and Wildlife Service and be authorized to halt any activity that may endanger desert tortoises.

  - The project monitor would be present during all monitoring/survey efforts, road improvements, and parking/turnout area construction.

  - Only the authorized biologists, approved by the U.S. Fish and Wildlife Service, would be allowed to handle/relocate desert tortoises.

  - Clearance surveys would be conducted one week prior to commencement of any construction/rehabilitation activities. All potential desert tortoise burrows within 100 feet of the designated routes, parking/turnout sites (existing or proposed), or staging areas would be examined and flagged. Clearance surveys would be conducted by either the project monitor or the authorized biologist, depending on the likelihood of an occurrence of desert tortoises for that area (i.e., the time of year, weather conditions, and suitability of the survey area as habitat for desert tortoises).

  - Only qualified and/or authorized biologists, as appropriate, would be utilized for oversight of all activities within the roadway corridor. The National Park Service would submit the names and qualifications of proposed project monitors and authorized biologists to the U.S. Fish and Wildlife Service for review and approval at least 15 days prior to initiation of surface-disturbing events. No project-related activity would commence unless these individuals have been selected and approved.

  - The new culvert installed at Daylight Pass would be a minimum of 30-inches in diameter, providing an adequately sized passageway for the desert tortoise.

  - The new cattle guard at the park boundary would be a tortoise-friendly design with metal bars spaced 4.7 inches (12 centimeters) apart and no more than 24-inches deep.

  - At the completion of the road reconstruction, all materials used to mark or identify the tortoise burrows would be promptly removed.

- Any desert tortoise relocated or otherwise removed from areas undergoing road reconstruction would be handled in accordance with the procedures described in *Guidelines for Handling Desert Tortoises During Construction Projects* (DTC 1994, revised 1996). Handling would occur only by an authorized biologist. All desert tortoise would be translocated the minimum distance practicable, within appropriate habitat, to facilitate the animal's safety and survival.

- Any project-related vehicle or equipment operating on unpaved roads would not exceed a speed limit of 25-miles per hour.

- Cross-country travel would not be authorized, except under life-threatening or emergency situations.

- The project monitor would conspicuously stake, flag, or mark work area boundaries (including the new access roads, realignments, and parking/turnout areas) to minimize surface disturbance to the surrounding habitat. Material stockpiling, machinery storage, and vehicle parking would only be permitted in designated areas.

- The contractor must protect against intrusion by the desert tortoise at sites with potential hazards (auger holes, steep-sided depressions, etc.) using tortoise-proof fencing at unattended sites. The fence would consist of a non-breachable barrier and support structures. Galvanized hardware cloth of 0.5-inch diameter, and at least 18-inches high, would be firmly secured along the base of the fence in direct contact with the ground. Fence placement and construction would be supervised and approved by the project monitor. All tortoise fencing would be dismantled and transported from the site following project completion.

- Temporary fencing established around desert tortoise hazard areas would be inspected at least weekly by the project monitor, and corrective action taken by the contractor to maintain the integrity of the desert tortoise barrier.

- A desert tortoise education program would be presented by the project monitor to all construction personnel prior to any construction activities. Following the onset of construction activities, any new employees would be required to formally complete the desert tortoise education program prior to working onsite. As a minimum, the desert tortoise education program would cover the following topics: (1) desert tortoise distribution/occurrence, (2) general behavior and ecology, (3) sensitivity of the species to human activities, (4) legal protection, (5) penalties for violation of state or federal laws, (6) reporting requirements, and (7) project protective mitigation measures.

- The project monitor would maintain a complete record of all desert tortoise encounters including live tortoises, carcasses, scat, tracks, burrows, and tracks. The record would include: location (coordinates in UTMs, NAD 83 taken with handheld GPS unit, Garmin or equivalent), date, time, life history (life stage, i.e., juvenile, adult, hatchling, yearling, approximate size), general condition

(observations on health of tortoise with particular attention paid to the head area, i.e., beak condition and color, nares condition, eyes, swelling, drainages, etc., and shell and appendage condition), any behavioral observations, identification numbers, photos (digital acceptable) and action taken. Within 90 days following the completion of this project, a report of all project monitoring activities and actions would be submitted to the U.S. Fish and Wildlife Service.

- No pets or firearms would be permitted inside project construction boundaries or other associated work areas at any time.

- Upon completion of this project, all materials, vehicles, and equipment would be removed from the project area.

- A litter control program would be implemented during construction to eliminate the accumulation of trash to avoid attracting common ravens that may prey on juvenile desert tortoise. All trash and food items would be promptly contained in raven- and coyote-proof containers provided by the contractor, and removed from the park each evening. Food and trash containers would not be left out overnight or on weekends or holidays when work is not occurring. Construction refuse would be transported off park lands on a weekly basis.

- Death Valley National Park would evaluate the feasibility of posting educational information at the new park boundary turnout, the refurbished Daylight Pass turnout, and the Hells Gate rest stop, advising visitors of the biology and protected status of the desert tortoise, desired human behavior relative to desert tortoises, the consequences for taking a threatened species, and the need to check under their vehicles before moving them to avoid running over tortoises seeking shade.

- Park visitors would be reminded that National Park Service regulations require dogs to be on a leash, minimizing their ability to disturb, injure, or kill desert tortoises.

- Park visitors would be advised to pack out their trash to avoid attracting tortoise predators such as common ravens to the area.

To protect Reveal's buckwheat (*Eriogonum contiguum*), the following measures would be implemented:

- The area at Daylight Pass outside the project "footprint" would be flagged as a sensitive area in the field and on plan sheets. Construction would not be allowed within the flagged area.

- Any Reveal's buckwheat plants noted in the project area would be fenced during construction.

- As is practicable, work should proceed from the roadway out; travel impacts should be kept to a minimum, and equipment should be kept to already disturbed or paved areas.

- A biological monitor would oversee all new ground disturbance at Daylight Pass.

Air Quality

- Fugitive dust plumes would be reduced to the extent possible by water sprinkling the soil during earth-disturbing activities. Water used during road construction would be obtained at Furnace Creek and hauled by truck to the site, or purchased in Beatty and hauled by truck. No heavy vehicles (e.g., water trucks) would be allowed on the Beatty Cutoff. Airborne particulates would be increased in the area of construction during the work effort.

- Concrete and asphalt plants would be located outside Death Valley National Park. No overnight storage of these materials would be permitted.

- Construction debris would be immediately hauled from the park to an appropriate disposal location.

Cultural Resources

- An archeologist would be present onsite, monitoring all work in the area of Daylight Pass (site DEVA 2003-14) to ensure that activities occur within the area of potential effect defined for the project and that no important information is lost.

- Should unknown archeological resources be uncovered during construction, work would be halted in the discovery area, the site secured, and Death Valley National Park would consult according to 36 CFR 800.13.

- In compliance with the Native American Graves Protection and Repatriation Act of 1990, the National Park Service would also notify and consult representatives of American Indian tribes likely to be culturally affiliated for the proper treatment of human remains, funerary, and sacred objects should these be discovered during the project.

- Paleontological remains and archeological specimens found within the construction area would be removed only by the National Park Service or their designated representatives.

Visitor Experience

- One lane of traffic would remain open during construction.

- Traffic delays that result from construction activities would be limited to a 30-minute maximum.

Health and Safety

- Construction would take place during the winter months to avoid the excessively high summer temperatures.

General Construction Schedule and Costs

Construction to rehabilitate Mud Canyon / Daylight Pass Road would take place in the winter, from October 2004 through May 2005. However, this is dependent on Congress passing a law reauthorizing spending on surface transportation programs at the expected levels. Delays in Congress or reauthorization at lower then expected levels would delay obligation of funds and start of construction. The estimated cost of construction is between $4 million and $7 million.

ALTERNATIVES CONSIDERED BUT DISMISSED

No options were considered to the overall road upgrades described under the preferred alternative. The National Park Service considers upgrading the Mud Canyon / Daylight Pass Road essential because it is used by park employees commuting from Beatty, as well as visitors entering the park from Nevada.

COMPARATIVE SUMMARY OF NO-ACTION AND PREFERRED ALTERNATIVES

No-Action Alternative	Preferred Alternative
There would be no improvements to Mud Canyon / Daylight Pass Road in Death Valley National Park. Death Valley National Park staff would respond to future needs and conditions associated with Mud Canyon / Daylight Pass Road without major actions or changes in the present course. Raveling (i.e., loosening) of the road edge would continue and the road surface would continue to have areas of severe rutting and cracking. Improvements to the parking areas and the Beatty Cutoff Road intersection to better accommodate larger vehicles and tour buses and enhance visitor safety would not be undertaken. Meets project objectives? **No.** Continuing the existing roadway maintenance would neither improve road surface conditions for park employees and visitors nor improve the visibility limitations near Daylight Pass. Safety issues in the parking areas and the Beatty Cutoff intersection with Mud Canyon / Daylight Pass Road would not be alleviated.	The deteriorated road surface along the 17.2 miles of Mud Canyon / Daylight Pass Road would be reconstructed, repaved, and widened to 24-feet wide (two 11-foot travel lanes with 1-foot paved shoulders), with the exception of the three curves that were realigned in 2001. A small parking area large enough to accommodate two recreational vehicles or six cars would be constructed at the park entrance. A new entry sign would be installed, while the existing cattle guard would be replaced with a new cattle guard in a desert tortoise friendly design. The turnout area at Daylight Pass would be reconfigured to improve visibility. The roadway would be moved approximately 12 feet northward. Ten-foot-wide paved aprons would be installed approximately 10 to 12 feet from each end (east and west) of the turnout area at the entrance points. Drainage on the east side of Daylight Pass would be conveyed from the south side to the north side of the road through a culvert to be installed under the roadway. Riprap at this culvert outlet would be enhanced to ensure that discharges do not cause erosion along the old Rhyolite/Skidoo Road. An existing concrete pad at Daylight Pass would be removed, as would the existing sign. When road work is completed, portions of the Mixing Table borrow area would be regraded within limits established by park staff. Topsoil would not be placed on the site, and revegetation would be achieved by allowing the area to reseed itself. The material piles and asphalt roadway at the site would not be reclaimed. The "Y" intersection at Hells gate (the intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff) would be improved by restriping the road and providing better signage. The acceleration lane from the Beatty Cutoff to eastbound Mud Canyon / Daylight Pass Road would be lengthened and made more distinctive with roadway striping. The Hells Gate parking area would be repaved and an island would be painted to keep people from parking vehicles too close to the road. Pedestrian crossing signs would be added to warn motorists of individuals crossing the road. A concrete walkway would be constructed to provide universal access to the information kiosk and restrooms. Trash receptacles would be removed.

No-Action Alternative	Preferred Alternative
	The stop sign at the Mud Canyon / Daylight Pass Road and Bonnie Claire Road intersection would be made reflective. Rumble strips would be created to warn motorists of the stop ahead. A wider apron would be paved to cover areas where motorists tend to cut the turns from Bonnie Claire Road onto Mud Canyon / Daylight Pass Road. Meets project objectives? **Yes.** The improvements would correct safety hazards for visitors and employees associated with the deteriorating road surface and poor visibility. Safety issues in the parking areas and the Beatty Cutoff intersection with Mud Canyon / Daylight Pass Road would be alleviated.

COMPARATIVE SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

Potential Environmental Impacts		
Impact Topic	**No-Action Alternative**	**Preferred Alternative**
Soils	No action would be taken in this alternative and, therefore, there would be no impact to soils.	Short-term, negligible, adverse impacts to desert soils due to compaction and disturbance. Long-term impacts to soils would be negligible and beneficial.
Vegetation	Local, long-term, negligible, adverse impacts to vegetation could occur from ongoing maintenance activities along Mud Canyon / Daylight Pass Road.	During construction: short-term, negligible, adverse impacts from ground disturbance. After construction: long-term, negligible, beneficial effects from allowing disturbed areas to return to natural conditions.
Wildlife	Impacts to wildlife from collisions with automobiles, as well as disturbances associated with human activities (e.g., feeding, harassment, noise), would have long-term, localized, negligible, adverse effects.	During construction: short-term, negligible to minor, adverse impacts from noise and human presence. After construction: long-term, negligible, beneficial effects from allowing disturbed areas to return to natural conditions.
Special-Status Species	Impacts to special-status species from collisions with automobiles, as well as disturbances associated with human activities (e.g., feeding, harassment, noise), would have long-term, localized, negligible, adverse effects.	Overall impacts to the desert tortoise would be short term, negligible to minor, and adverse and long term, negligible, beneficial.
Visitor Use and Experience	The deteriorating condition of Mud Canyon / Daylight Pass Road and poorly delineated road features (e.g., parking areas, intersections) constitutes a short- and long-term, negligible to minor, adverse impact to visitor experience.	Short-term, minor to moderate, adverse impacts from delays during construction. Long-term, minor, beneficial effects from improvements to road and parking areas.
Health and Safety	Long-term, minor to moderate, adverse impacts to health and safety from poor road conditions and design deficiencies.	Long-term, moderate, beneficial effects to health and safety from road improvements and signage.

AFFECTED ENVIRONMENT

Detailed information on resources in Death Valley National Park may be found in the *General Management Plan* (NPS 2002). A summary of the resources associated with this project follows.

LOCATION AND GENERAL DESCRIPTION OF THE PARK

Death Valley National Park is the largest national park unit in the contiguous 48 states. The majority of park lands are located in the California counties of Inyo and San Bernardino, but a small portion of the park is located in the Nevada counties of Nye and Esmerelda (see figure 1). California State Highway 190 crosses Death Valley National Park east to west, and Highway 95 parallels the park north to south on the eastern boundary (NPS 2002).

Death Valley National Park encompasses 3,396,192 acres in the Mojave Desert, a zone of overlap between the Great Basin Desert to the north and the Sonoran Desert to the south. The park includes all of Death Valley, a 156-mile long, north/south trending trough that formed between two major block-faulted mountain ranges: the Amargosa Range on the east and the Panamint Range on the west. Telescope Peak, the highest peak in the park and in the Panamint Range, rises 11,049 feet above sea level and lies only 15 miles from the lowest point in the Western Hemisphere in the Badwater Basin salt pan, 282 feet below sea level (NPS 2002).

Most of the landscape at Death Valley National Park is open, with broad vistas of relatively undeveloped land. Early miners and ranchers developed roads that today offer visitors a chance to drive to many remote locations where informal camping has traditionally occurred. The many roadless areas of the park offer hikers the experience to explore. There are many cultural sites such as abandoned mining districts that attract visitors. The mountain ranges offer a contrast to the hot dry valleys of the park, attracting people in the summers with cooler temperatures and forested areas. Exposed geology and unique wildlife are other resources that attract people to Death Valley National Park. The land has many extremes and contrasts that people come to experience. Most visitors come to the desert simply to see the outstanding scenery of this diverse landscape (NPS 2002).

SOILS

Soils have not been mapped along the Mud Canyon / Daylight Pass Road corridor; however, general soils information can be determined based on the geologic formations from which the soils were derived. The topographic lows on either end of the road consist of sedimentary deposits resulting from erosion of higher areas and deposition in alluvial fans and drainage channels. Also included are soils derived from deposits of evaporates, principally limestone, gypsum, and salt, carried in by water. There are also volcanically derived soils from erosion of volcanic layers interspersed within the park (Harris et al. 1997). The basin soils are thicker in the bottom of the basins and grow thinner as the slope and elevation increase. Soils in the

higher elevations are derived from the mountain rocks present in the vicinity and contain rocks and rocky outcrops.

VEGETATION

A vegetation survey of the Mud Canyon / Daylight Pass Road corridor was conducted in April and May 2003 (NPS 2003), and identified four plant communities dominated by shrubs. The plant communities were classified, following Sawyer and Keeler-Wolf (1995), as Brittlebush (*Encelia farinose*) / Brittlebush-white bursage (*Ambrosia dumosa*); Creosote bush (*Larrea tridentata*) / Creosote bush-white bursage; Desert-holly (*Atriplex hymenelytra*); and Fourwing saltbush (*Atriplex canescens*) (NPS 2003).

The approximately 17.2 miles of road corridor impacted by this project traverses an elevational range from 200- to 4,300-feet above sea level, and consequently passes through several plant communities. The Creosote bush (*Larrea tridentata*) / Creosote bush-white bursage (*Ambrosia dumosa*) community, in which creosote bush is the sole or dominant shrub in the canopy, occurs in alluvial fans, bajadas, and along upland slopes. Soils supporting this community are well-drained and may exhibit desert pavement surfaces. This community is common adjacent to Mud Canyon Road for much of the 17.2 miles within the project area.

The segment of the project from the Bonnie Claire Road / Mud Canyon intersection to Hells Gate is a low elevation (200- to 1,900-feet above sea level), rocky, and sparsely-shrubbed area. Between Hells Gate and the park boundary, elevation ranges from 2,000 to 4,300 feet above sea level, with considerable topographic relief providing a full range of slope and aspect combinations.

The common plant community at lower elevations is the Desert-holly (*Atriplex hymenelytra*) community in which this species is the sole or conspicuous shrub in the canopy. This community is commonly found in dissected alluvial fans and along washes at lower elevations.

Other plant communities occurring along the project area include:

Brittlebush (*Encelia farinosa*) / Brittlebush-White Bursage (*Ambrosia dumosa*)

In this community, brittlebush is a primary component or may be codominant with California buckwheat shrubs in the canopy. This community occurs in alluvial fans, on bajadas, and along upland slopes. Soils supporting this type of community are typically well-drained and may have desert pavement surface. Within the project area, this community is common adjacent to the road and in washes.

Fourwing Saltbush (*Atriplex canescens*)

In this community, fourwing saltbush is the sole or dominant shrub in the canopy. This community occurs on bluffs, dunes, rocky slopes at lower elevations, and in washes. Soils supporting this community type may be carbonate-rich. Within the project area, this community is common adjacent to the road and in washes.

Non-native plant species have altered plant communities throughout Death Valley National Park (NPS 2003). Those found in the Mud Canyon / Daylight Pass Road corridor included slender oats (*Avena barbata*), red brome (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), Bermuda grass (*Cynodon dactylon*), filaree (*Erodium cicutarium*), halogeton (*Halogeton glomeratus*), shield cress (*Lepidium perfoliatum*), barbwire Russian thistle (*Salsola paulsenii*), Oriental mustard (*Sisymbrium orientale*), and puncture vine (*Tribulus terrestris*) (NPS 2003).

WILDLIFE

The vegetation zones and the adjacent desert of Death Valley National Park support a variety of wildlife species, including 51 species of native mammals, 307 species of birds, 36 species of reptiles, 3 species of amphibians, and 1 species and 4 subspecies of native fishes (NPS 2003a). The project area is predominately represented by creosote bush, desert holly, and white bursage (NPS 2000, 2003). Wildlife of Death Valley National Park that are supported in plant associations dominated by these desert shrub species (e.g., the Desert-holly series, the Creosote bush series, and/or the Creosote bush-white bursage series) and, therefore, have the potential to occur in the project area, are discussed below. Fish and amphibians have not been considered because there are no water bodies or wetlands in the project area that would support such species.

Mammals

Small mammals of Death Valley National Park that may occur in the Mud Canyon / Daylight Pass Road corridor include black-tailed jackrabbit (*Lepus californicus*), Great Basin pocket mouse (*Perognathus parvus*), long-tailed pocket mouse (*Perognathus formosus mohavensis*), and the canyon mouse (*Peromyscus crinitus*) (NPS 2003a). Kit foxes (*Vulpes macrotis*) have also been observed along the Beatty Cutoff and between Hells Gate and Daylight Pass (2004b). Although less common, carnivorous species with the potential to occur in the project area include coyote (*Canis latrans*), badger (*Taxidea taxus*), and bobcat (*Lynx rufus*). Ungulates are also less common in the park than small mammals, and include mule deer (*Odocoileus hemionus*), desert bighorn sheep (*Ovis canadensis nelsoni*), and the introduced burro and wild horse (*Equus caballus*) (NPS 2003a).

Birds

Birds observed in Death Valley National Park that may occur near the Mud Canyon / Daylight Pass Road corridor include Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), Gambel's quail (*Callipepla gambelii*), the greater roadrunner (*Geococcyx californianus*), great horned owl (*Bubo virginianus*), common raven, rock wren (*Salpinctes obsoletus*), Brewer's blackbird (*Euphagus cyanocephalus*), and white-crowned sparrow (*Zonotrichia leucophrys*) (NPS 2003a). A pair of golden eagles (*Aquila chrysaetos*) have been spotted in the area around Daylight Pass in 2004 (NPS 2004b).

Reptiles

Reptiles with the potential to occur near the Mud Canyon / Daylight Pass Road corridor in Death Valley National Park include the desert tortoise (*Gopherus agassizii*) (a federally listed threatened species discussed in more detail in the "Special-Status Species (Threatened and Endangered Species and Species of Concern)" section of this environmental assessment), collared lizard (*Crotaphytus bicinctores*), leopard lizard (*Gambella wislizenii*), desert spiny lizard (*Sceloporus magister magister*), Panamint alligator lizard (*Elgaria panamintina*), rosy boa (*Lichanura trivigata*), Great Basin gopher snake (*Pituophis melanoleucus deserticola*), western long-nosed snake (*Rhinocheilus lecontei lecontei*), and western ground snake (*Sonora semiannulata*) (NPS 2003a).

Wildlife are currently affected in the road corridor as a result of human activity. Collisions with wildlife, especially small mammals, occur within the Mud Canyon / Daylight Pass Road corridor and locally affect individuals. Also, human activities associated with feeding wildlife, harassment, and noise cause disturbances to individuals, and in some cases make individuals dependent on humans for food.

SPECIAL-STATUS SPECIES (THREATENED AND ENDANGERED SPECIES AND SPECIES OF CONCERN)

Under the Endangered Species Act of 1973, as amended, an endangered species is defined as any species in danger of extinction throughout all or a significant portion of its range. There are five endangered species, two of which are listed plants, and one federally threatened species known at Death Valley National Park (NPS 2004b). A threatened species is defined as any species likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range. Only the desert tortoise (discussed below) is a concern for the proposed action.

The U.S. Fish and Wildlife Service is responsible for providing other federal agencies with a list of endangered or threatened species, or species of concern that may be affected by a proposed federal action. The U.S. Fish and Wildlife Service has indicated that the only wildlife species of concern for this project is the desert tortoise (appendix B). Appendix C provides a detailed biological assessment that describes and considers impacts to the desert tortoise, listed as threatened under the Endangered Species Act of 1973, as amended, and by the states of California and Nevada.

The following is a summary of the survey for desert tortoise in the Mud Canyon / Daylight Pass Road corridor. Please refer to the biological assessment included in appendix C for more detailed information regarding habitat requirements and survey results.

Desert Tortoise

Desert tortoise surveys were conducted along Mud Canyon / Daylight Pass Road from Hells Gate to the eastern boundary of the park. The project area for survey purposes was a corridor

300-feet wide, 150 feet on either side of the existing road centerline. Within this corridor, transects were spaced at 10-meter intervals. Additionally, transects were walked in a "zone of influence" that extended 2,400 feet from the project area border. Transects in the zone of influence were walked at distances of 100 feet, 300 feet, 600 feet, 1,200 feet, and 2,400 feet from the project area boundary. In areas proposed for realignment, the project area and zone of influence were increased appropriately. All recommendations in the U.S. Fish and Wildlife Service protocols for desert tortoise surveys were followed (Woodman 2003).

One desert tortoise was found near the project area. This individual, a male measuring 310 millimeter mid-carapace length, was found in the zone of influence transect that was 2,400 feet from the boundary of the project work area. The tortoise was in apparently good health. No other desert tortoise sign was observed in either the project area or the zone of influence transects during this survey (Woodman 2003). Although not a part of the official survey, three separate sightings of desert tortoises (an apparently different individual each time) crossing highway 374 in the vicinity of Daylight Pass were reported in the period between August 26 and September 24, 2003 (NPS 2003c).

The desert tortoise is predominantly herbivorous and a semifossorial inhabitant of warm upland plateaus and mountain slopes in the Mojave Desert. In the Mojave Desert, the desert tortoise occupies creosote bush scrub and the creosote bush – white bursage community. The native grass, big galleta (*Hilaria rigida*), is often present where the desert tortoise is most abundant. In general, desert tortoises forage primarily on native winter and summer annual plants (dicots and grasses), perennial grasses, cacti, and perennial shrubs in descending order of preference. Insects, caterpillars, and other insect larvae may also be eaten, and desert tortoises have been observed biting road-killed anurans and lizards (Brown 1968, Okamoto 1995 in NatureServe 2003).

Desert tortoise habitats are most often associated with well-drained sandy loam soils of plains, alluvial fans, and bajadas, although they may also occur along the edges of basaltic flow and other rock outcrops. In the Mojave Desert, the sandy loam soils may be obscured by a veneer of desert pavement and burrows are most often proximate to washes and arroyos under these conditions. The desert tortoise has a tendency to excavate and utilize more than one burrow, and juveniles are particularly prone to excavate multiple burrows (mostly under large shrubs) and also use abandoned rodent burrows (Woodbury and Hardy 1948, Luckenbach 1982 in NatureServe 2003). Burrows often extend from 1 to 8 feet in length and have a single opening. For the Mojave Desert, burrows most often open under a creosote bush (59% to 77% of the time) or white bursage shrub (21% of the time).

Adult desert tortoises in the Mojave Desert are typically active from March through September, with a total active period of about 4 to 5 months per year. Mating occurs from August through October and again in April and May. Desert tortoise eggs are laid mainly from May to early July in shallow depressions, often 3- to 4-inches deep. Newly hatched desert tortoises emerge from the nests in September and 83% of neonatal tortoises excavated new burrows or enlarged pre-existing rodent burrows in their first weeks (Niblick et al. 1994, Turner et al. 1984, Turner et al. 1986, USFWS 1994 in NatureServe 2003).

Reveal's Buckwheat

The only special-status plant species known to occur within the project area is Reveal's buckwheat (*Eriogonum contiguum*).

Reveal's buckwheat is an annual herb in the Polygonaceae (buckwheat family) that blooms from March through June. It is known from the eastern Mojave Desert in California and western Nevada (Weatherwax 2002). Regionally, it is found in the Funeral and Grapevine Mountains. A population of over 1,000 plants was observed on April 19, 2000, north of the roadway at Daylight Pass. During a survey conducted in 2003, a close relative, *Eriogonum tricopes*, was observed growing next to and with *E. contiguum*. *Eriogonum tricopes* was observed in many locations within the project area. Within the project area, Reveal's buckwheat is only found at Daylight Pass north of the roadway.

VISITOR EXPERIENCE

Mud Canyon / Daylight Pass Road is one of seven paved highway entrances into Death Valley National Park. It is the major route used by visitors traveling to and from Beatty, Nevada, northeast of the park. This route has long downhill grades and sharp horizontal curves that can cause a driver to lose control of their vehicle. In 2001, three curves along the road were realigned and widened for safety reasons; however, the remainder of the road has not been recently improved. As a result, visitors encounter deteriorating road surfaces and shoulders that create a relatively rough driving experience.

In 1995, the annual average daily traffic for this road was 336 vehicles. The road is more heavily used in the summer when visitors take the higher and relatively cooler U.S. Highway 95 to avoid the linear route through the valley (NPS 2000). Both informal gravel turnouts and formal turnouts, such as those at Daylight Pass and Hells Gate, provide visitors with the opportunity to get out and view scenic resources as they drive Mud Canyon / Daylight Pass Road. From the Hells Gate parking area, visitors can take a strenuous hike to Death Valley Buttes—prominent buttes located at the foot of the Grapevine Mountains. Mud Canyon / Daylight Pass Road also provides alternative access to more developed visitor use areas such as Badwater, Stovepipe Wells Village, and Furnace Creek. Visitor services and opportunities in these areas include the Badwater pools, gas stations, food service, lodging, camping, and Furnace Creek Visitor Center and Death Valley Museum (Furnace Creek).

HEALTH AND SAFETY

The road is used by park visitors to access the park through Beatty, Nevada, and to travel from the park. The road is also used by park employees who live in Beatty and travel to park headquarters each work day. School buses carry children from communities in the park to schools in Beatty and travel the road each day during the school year.

At present, people traveling on Mud Canyon / Daylight Pass Road encounter dangerous conditions from the deterioration of the road surface and shoulders. The Daylight Pass

turnout is also currently dangerous because of the limited line of site in both directions. Conditions at Hells Gate also create dangerous situations for travelers on Mud Canyon / Daylight Pass Road. The "Y" intersection is poorly delineated, while the acceleration lane for vehicles entering Mud Canyon / Daylight Pass Road from the Beatty Cutoff is too short for visitors to reach an appropriate merging speed. Also, there are no signs that warn motorists of the potential for pedestrians to cross the road near the parking area at Hells Gate.

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section describes the potential environmental consequences associated with the no-action and preferred alternatives. The methodologies and assumptions for assessing environmental consequences are discussed, including consideration of context, intensity, and duration of impacts; cumulative impacts; and measures to mitigate impacts. As mandated by National Park Service policy, resource impairment is explained and then assessed for each alternative. Subsequent parts of this section are organized by impact topic, first for the no-action alternative and then for the National Park Service preferred alternative.

METHODOLOGY

Overall, the National Park Service based these impact analyses and conclusions on the review of existing literature and Death Valley National Park studies, information provided by experts at the park and in other agencies, professional judgments and park staff insights, the California and Nevada SHPOs, input from interested local tribes, and public input.

Context, Duration and Intensity, and Type of Impact

The following definitions were used to evaluate the context, intensity, duration, and cumulative nature of impacts associated with project alternatives.

Context

Context is the setting within which an impact is analyzed such as local, parkwide, or regional. The Council on Environmental Quality requires that impact analyses include discussions of context. For this environmental assessment, local impacts would occur within the general vicinity of Mud Canyon / Daylight Pass Road, while parkwide impacts would affect a greater portion of the park and regional impacts would extend outside the limits of the park.

Duration

The duration of an impact is the time period for which the impacts are evident and are expressed in the short term or in the long term. A short-term impact would be temporary in duration and would be associated with road improvements, as well as the period of site restoration. Depending on the resource, impacts may last as long as construction takes place, or a single year or growing season, or longer. Impact duration for each resource is unique to that resource. Impact duration for each resource is presented in association with impact intensities in the following “Methodologies” section.

Intensity

Impact intensity is the degree to which a resource would be beneficially or adversely affected. The criteria that were used to rate the intensity of the impacts for each resource topic are presented later in this section under each topic heading.

Type of Impact

Impacts can be beneficial or adverse. Beneficial impacts would improve resource conditions while adverse impacts would deplete or negatively alter resources.

IMPACT INTENSITY THRESHOLDS

Soils

All available information on soils potentially impacted in the park was compiled from *Geology of National Parks*, revised printing, fifth edition, chapter 46, Death Valley National Park (Harris et al. 1997). Predictions about short- and long-term site impacts were based on previous projects with similar soils and recent studies. The thresholds of change for the intensity of an impact to soils are defined as follows:

Impact Intensity	Intensity Definition
Negligible	Soils would not be affected or the effects to soils would be below or at the lower levels of detection. Any effects to soils would be slight.
Minor	The effects to soils would be detectable. Effects to soil area, including soil disturbance and erosion would be small and localized. Mitigation may be needed to offset adverse effects and would be relatively simple to implement and likely be successful.
Moderate	The effect on soils would be readily apparent and result in a change to the soil character over a relatively wide area, erosion of soils over a wide area or soil disturbance over a wide area. Mitigation measures would be necessary to offset adverse effects and likely be successful.
Major	The effect on soils would be readily apparent and substantially change the character of the soils over a large area, substantial erosion would occur resulting in large amount of soil loss. Mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed.

Soil impacts would be considered short term if the soils recover in less than 3 years and long term if the recovery takes longer than 3 years.

Vegetation

All available information on vegetation and vegetative communities potentially impacted along the Mud Canyon / Daylight Pass Road was compiled from the "Botanical Survey Report for Daylight Pass / Mud Canyon Roads" (NPS 2003). Where possible, map locations of sensitive

vegetation species, populations, and communities were identified. Predictions about short- and long-term site impacts were based on previous projects with similar vegetation and recent studies. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be on a small scale.
Minor	The alternative would affect some individual native plants and would also affect a relatively limited portion of that species' population. Mitigation to offset adverse effects could be required and would be effective.
Moderate	The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful.
Major	The alternative would have a considerable effect on native plant populations and affect a relatively large area in and out of the park. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

Duration of vegetation impacts is considered short term if the vegetation recovers in less than 3 years and long term if the vegetation takes longer than 3 years to recover.

Wildlife

The National Park Service Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities. According to *NPS Management Policies 2001,* the restoration of native species is a high priority (sec. 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals. Information on Death Valley National Park wildlife was taken from park documents and records. Park natural resource management staff also provided wildlife information. The thresholds of change for the intensity of an impact to wildlife are defined as follows:

Impact Intensity	Intensity Definition
Negligible	There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.
Minor	Impacts would be detectable, but they would not be expected to be outside the natural range of variability. Mitigation measures, if needed to offset adverse effects, would be simple and successful.

Moderate	Breeding animals are present; animals are present during particularly vulnerable life-stages such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the park unit. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
Major	Impacts on native species, their habitats, or the natural processes sustaining them would be detectable. Loss of habitat might affect the viability of at least some native species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

The duration of wildlife impacts is considered short term if the recovery is less than one year and long term if the recovery is longer than one year.

Threatened and Endangered Species and Species of Concern

The Endangered Species Act of 1973 (16 USC 1531 *et seq.*), as amended, mandates that all federal agencies consider the potential effects of their actions on species listed as threatened or endangered. If the National Park Service determines that an action may adversely affect a federally listed species, consultation with the U.S. Fish and Wildlife Service is required to ensure that the action would not jeopardize the species' continued existence or result in the destruction or adverse modification of critical habitat. *NPS Management Policies 2001* states that potential effects of agency actions would also be considered for state or locally listed species.

It is the policy of the National Park Service to manage critical habitat of such species and to perpetuate the natural distribution and abundance of these species, as well as the ecosystems upon which they depend. The U.S. Fish and Wildlife Service was contacted for a list of special-status species and designated critical habitats that may be within the project area or affected by any of the alternatives (see appendix B). Information on possible threatened, endangered, and candidate species, as well as species of special concern, was gathered from published sources. Information from prior research at Death Valley National Park was also incorporated. Known impacts caused by development and human use were also considered. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The action could result in a change to a population or individuals of a species or designated critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence and would be well within natural variability. This impact intensity equates to a U.S. Fish and Wildlife Service "may affect, not likely to adversely affect" determination.
Minor	The action could result in a change to a population or individuals of a species or designated critical habitat. The change would be measurable, but small and localized and of little consequence. Mitigation measures, if needed to offset the adverse effects, would be simple and successful. This impact intensity equates to a U.S. Fish and Wildlife Service "may affect, not likely to adversely affect" determination.

Moderate	Impacts on special-status species, their habitats, or the natural processes sustaining them would be detectable and occur over a large area. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful. This impact intensity equates to a U.S. Fish and Wildlife Service "may affect, likely to adversely affect" determination.
Major	The action would result in a noticeable effect to viability of a population or individuals of a species or resource or designated critical habitat. Impacts on a special-status species, critical habitat, or the natural processes sustaining them would be detectable, both in and out of the park. Loss of habitat might affect the viability of at least some special-status species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed. This impact intensity equates to a U.S. Fish and Wildlife Service "may affect, likely to jeopardize the continued existence of a species or adversely modify critical habitat for a species" determination.

Special-status species' impacts are considered short term if the species recovers in less than one year and long term if it takes longer than one year for the species to recover.

Visitor Use and Experience

National Park Service Management Policies 2001 state that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the National Park Service is committed to providing appropriate, high-quality opportunities for people to enjoy the parks.

Part of the purpose of Death Valley National Park is to offer opportunities for recreation, education, inspiration, and enjoyment. Consequently, one of the park's management goals is to ensure that visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of park facilities, services, and appropriate recreational opportunities.

Public scoping input and observation of visitation patterns, combined with an assessment of what is available to visitors under current management, were used to estimate the effects of the actions in the various alternatives of this document. The impact on the ability of the visitor to experience a full range of Death Valley National Park resources was analyzed by examining resources and objectives presented in the park significance statement. The potential for change in visitor use and experience proposed by the alternatives was evaluated by identifying projected increases or decreases in use of the Mud Canyon / Daylight Pass Road, and other visitor uses, and determining how these projected changes would affect the desired visitor experience, and to what degree and for how long. The thresholds of change for the intensity of an impact to visitor experience are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The visitor would not be affected or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.
Minor	Changes in visitor use and/or experience would be detectable, although the changes would be slight. Some of the visitors would be aware of the effects associated with the alternative, but the effects would be slight and not noticeable by most visitors.
Moderate	Changes in visitor use and/or experience would be readily apparent to most of the visitors. Visitors would be aware of the effects associated with the alternative and might express an opinion about the changes.
Major	Changes in visitor use and/or experience would be readily apparent to all of visitors, severely adverse or exceptionally beneficial. Visitors would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

Impacts to visitor use and experience are considered short term if the effects last only as long as the construction period. Impacts are considered long term if the effects last longer than the construction period.

Health and Safety

The impact assessment for health and safety focused on the number of potential individuals impacted and the severity of the impact. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	Health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on visitor or employee health and safety.
Minor	The effect would be detectable, but would not have an appreciable effect on health and safety. If mitigation were needed, it would be relatively simple and would likely be successful.
Moderate	The effects would be readily apparent and would result in substantial, noticeable effects to health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.
Major	The effects would be readily apparent and would result in substantial, noticeable effects to health and safety on a regional scale. Extensive mitigation measures would be needed, and their success would not be guaranteed.

The effects to safety are considered short term if the effects last for the period of construction and long term if the effects last beyond the period of construction.

DIRECT VERSUS INDIRECT IMPACTS

The following definitions of direct and indirect impacts are considered:

> *Direct* – an effect that is caused by an action and occurs at the same time and in the same place.
>
> *Indirect* – an effect that is caused by an action that is later in time or farther removed in distance, but is still reasonably foreseeable.

CUMULATIVE EFFECTS

Cumulative effects are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such action. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

The Council on Environmental Quality regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR 1508.7).

Cumulative impacts are considered for all alternatives and are presented at the end of each impact topic discussion analysis.

Projects that Make Up the Cumulative Impact Scenario

To determine potential cumulative impacts, projects within the area surrounding Death Valley National Park were identified. The area included lands administered by the Department of Defense and U.S. Forest Service. Projects were determined by meetings and phone calls with county and town governments and state land managers. Potential projects identified as cumulative actions included any planning or development activity that was currently being implemented or that would be implemented in the reasonably foreseeable future.

These cumulative actions are evaluated in the cumulative impact analysis in conjunction with the impacts of each alternative to determine if they would have any additive effects on a particular natural resource, cultural resource, visitor use, or the socioeconomic environment. Because some of these cumulative actions are in the early planning stages, the evaluation of cumulative effects was based on a general description of the project.

Past Actions

The following past actions could contribute to cumulative effects:

- Rehabilitation of Badwater Road – The road rehabilitation work was nearing completion in May of 2003. It included resurfacing the road, reconstruction of shoulders, and replacement of culverts.

- Badwater Visitor Use Area Improvements – The construction and associated activities have been recently completed and included improving visitor access to the Badwater pools, improving universal accessibility, improving parking, improving vehicle and pedestrian circulation, and improving interpretive exhibits at the site.

- Nevada Department of Transportation State Route 374 Improvements – This project was completed in early 2003, and included regrading and chip sealing the existing road from the Death Valley National Park boundary to Beatty.

Current and Future Actions

Current actions and those projected for the future could also contribute to cumulative effects. These include:

- Rehabilitation of Bonnie Claire / Ubehebe Crater Road – This road work is planned for some time in 2007 or 2008, depending on the availability of funding. Road improvements would be similar to those described for Mud Canyon / Daylight Pass Road (e.g., repaving, repairing raveling edges and soft shoulders).

- Waterline Replacement at Cow Creek Area – Plans have recently been completed to replace the waterline from Nevares Springs to the Cow Creek area due to pipe breaks.

- Furnace Creek Water System Update – This project would change withdrawal scenarios and pumping/piping systems based on current and expected future needs, as well as revised water quality standards for arsenic and the location of rare and endemic species. This project is targeted for completion in 2007.

- Phase II of DEVA 500 – Phase II of DEVA 500 is a continuation of improvements to park facilities at park headquarters near Furnace Creek. Improvements include new buildings (e.g., new maintenance facility), new adobe where existing adobe has eroded away, and a new gas station, among others.

IMPAIRMENT OF DEATH VALLEY NATIONAL PARK RESOURCES OR VALUES

In addition to determining the environmental consequences of the preferred and other alternatives, the 2001 *NPS Management Policies* and Director's Order – 12, require analysis of potential effects to determine if actions would impair Death Valley National Park resources.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on park and monument resources and values. However, the laws do give National Park Service management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given National Park Service management discretion to allow certain impacts within parks, that discretion is limited by statutory requirements that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment. However, an impact would more likely constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park
- identified as a goal in the Death Valley National Park *General Management Plan* or other relevant National Park Service planning documents

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. In this "Environmental Consequences" section, a determination on impairment is made in the conclusion statement of the appropriate impact topics for each alternative. The National Park Service does not analyze recreational values / visitor experience (unless impacts are resource based), socioeconomic values, health and safety, or park operations for impairment.

ENVIRONMENTAL CONSEQUENCES—ALTERNATIVE 1: NO ACTION

Soils

No action would be taken in this alternative and, therefore, there would be no impact to soils.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect soils include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374); the Badwater visitor use area improvements; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Ground disturbance associated with construction activities such as regrading and resurfacing roads, shoulder reconstruction, culvert

replacements/extensions, pipeline installation, and facility improvement/construction, would have long-term, negligible to minor, adverse impacts on soils.

Because the no-action alternative would not impact soils, there would be no cumulative impacts.

Conclusion. No action would be taken in this alternative and, therefore, there would be no impact to soils. Because the no-action alternative would not impact soils, there would be no cumulative impacts.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources and values.

Vegetation

Under the no-action alternative, there would be no new ground-disturbing activities with the potential to affect vegetation. Ongoing road maintenance could adversely affect roadside vegetation, however, such effects would be long term, localized, and negligible. There would be no changes in the current status of vegetative communities, either in terms of species composition or population dynamics, other than those brought about by natural environmental processes.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect vegetation include the rehabilitation of the Bonnie Claire / Ubehebe Crater Road; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Activities associated with the roadway project such as regrading, resurfacing, shoulder reconstruction, and culvert replacements/extensions, would disturb or cover vegetation, having long-term, minor, adverse impacts.

The waterline replacement in the Cow Creek area and Phase II of the DEVA 500 project would have long-term, minor, adverse impacts on vegetation as a result of trenching activities and facility improvements/construction that disturb or cover plant communities. The Furnace Creek water system update would change withdrawal scenarios and pumping/piping systems, affecting the availability and flow of water, which in turn could affect the distribution of riparian vegetation. The no-action alternative would have negligible, adverse contributions to the cumulative impacts on vegetation in the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have long-term, minor, adverse impacts on vegetation.

Conclusion. Local, long-term, negligible, adverse impacts to vegetation could occur from ongoing maintenance activities along Mud Canyon / Daylight Pass Road. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with

the no-action alternative, would have long-term, minor, adverse impacts on vegetation. The no-action alternative would have negligible, adverse contributions to the cumulative impacts on vegetation in the long term.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources and values.

Wildlife

There would be no new impacts or changes to impacts to wildlife under the no-action alternative. Impacts to wildlife from collisions with automobiles, as well as disturbances associated with human activities (e.g., feeding, harassment, noise) would continue having long-term, localized, negligible, adverse effects. There would be no changes in the current status of wildlife communities, either in terms of species composition or population dynamics, other than those brought about by natural environmental processes.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect wildlife include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374); the Badwater visitor use area improvements; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Construction noise, as well as temporary or permanent displacement and habitat disturbance/loss associated with construction activities such as regrading and resurfacing roads, shoulder reconstruction, culvert replacements/extensions, pipeline installation, and facility improvement/construction, would have short- and long-term, negligible to minor, adverse impacts on wildlife.

The Furnace Creek water system update would change withdrawal scenarios and pumping/piping systems, affecting the availability and flow of water, which in turn could affect the distribution of wildlife habitat or individual species dependent on the creek. The no-action alternative would have negligible, adverse contributions to the cumulative impacts on wildlife in the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have short- and long-term, negligible to minor, adverse impacts on wildlife.

Conclusion. There would be no new impacts or changes to impacts to wildlife under the no-action alternative. Ongoing impacts to wildlife from collisions with automobiles, as well as disturbances associated with human activities (e.g., feeding, harassment, noise) would have long-term, localized, negligible, adverse effects. The cumulative effects of past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have short- and long-term, negligible to minor, adverse impacts on wildlife. The no-action alternative would have negligible, adverse contributions to the cumulative impacts on wildlife in the long term.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources and values.

Special-Status Species (Threatened and Endangered Species and Species of Concern)

No action would be taken in this alternative and, therefore, there would be no new impact to threatened, endangered, or special-concern species. The primary species of concern is the desert tortoise. As with other wildlife species, impacts to desert tortoise from collisions with automobiles, as well as disturbances associated with human activities (e.g., handling, harassment, noise) would continue having long-term, localized, negligible, adverse effects. There would be no changes in the current status of desert tortoise, either in terms of species composition or population dynamics, other than those brought about by natural environmental processes. Since the no-action alternative would not disturb vegetation near Daylight Pass, there would be no impact to Reveal's buckwheat.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect special-status species, specifically the desert tortoise, include other roadway-related projects (e.g., the rehabilitation of the Bonnie Claire / Ubehebe Crater Road and improvements to California State Route 374), the waterline replacement in the Cow Creek area, the Furnace Creek water system update, and the Phase II DEVA 500 project at Furnace Creek. None of these projects would have cumulative effects on Reveal's buckwheat. Construction noise, as well as habitat disturbance/loss associated with construction activities such as regrading and resurfacing roads, shoulder reconstruction, culvert replacements/extensions, pipeline installation, and facility improvement/construction, would have short- and long-term, negligible to minor, adverse impacts on the desert tortoise.

The Furnace Creek water system update would change withdrawal scenarios and pumping/piping systems affecting the availability and flow of water, which in turn could affect the distribution of special-status species dependent on the creek and its associated vegetation communities. The no-action alternative would have negligible, adverse contributions to the cumulative impacts on special-status species in the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have short- and long-term, negligible to minor, adverse impacts on special-status species.

Conclusion. Impacts to desert tortoises from collisions with automobiles, as well as disturbances associated with human activities (e.g., handling, harassment, noise), would have long-term, localized, negligible, adverse effects. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have short- and long-term, negligible to minor, adverse impacts on special-status species.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources or values.

Visitor Experience

Visitors that drive on Mud Canyon / Daylight Pass Road experience deteriorated road conditions. Under the no-action alternative, cracking of the road surface would be remedied through patching, while the road shoulders would continue to deteriorate despite ongoing maintenance. Parking areas at Daylight Pass and Hells Gate, as well as the intersection of Mud Canyon / Daylight Pass Road and the Beatty Cutoff, would continue to be poorly delineated. The existing condition constitutes a short- and long-term, negligible to minor, adverse impact to visitor experience.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect visitor experience include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374); the Badwater visitor use area improvements; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Construction noise, the presence of construction equipment, and construction-related traffic delays or facility closures would have short-term, negligible to minor, adverse impacts on visitor experience for the duration of the construction activities.

However, improvements associated with each of these projects (e.g., rehabilitated road surfaces, improved accessibility and parking, improved infrastructure, and new or rehabilitated facilities) would have long-term, minor, beneficial effects on visitor experience. The no-action alternative would have negligible to minor, adverse contributions to cumulative effects in the short and long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have short-term, negligible to minor, adverse impacts on visitor experience, and long-term, negligible to minor, beneficial impacts.

Conclusion. The deteriorating condition of Mud Canyon / Daylight Pass Road and poorly delineated road features (e.g., parking areas, intersections) constitutes a short- and long-term, negligible to minor, adverse impact to visitor experience. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have short-term, negligible to minor, adverse impacts on visitor experience, and long-term, negligible to minor, beneficial impacts.

Health and Safety

Under the no-action alternative, people traveling on Mud Canyon / Daylight Pass Road would continue to encounter dangerous conditions from the deterioration of the road surface and shoulders, a limited line of site on Daylight Pass Road, a poorly delineated intersection and inadequate acceleration lane at Mud Canyon / Daylight Pass Road, and poor signage at Hells Gate. This constitutes a long-term, minor to moderate, adverse impact to health and safety.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect health and safety include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374); the Badwater visitor use area improvements; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Improvements associated with each of these projects (e.g., rehabilitated road surfaces, improved accessibility and parking, improved infrastructure, and new or rehabilitated facilities) would have long-term, minor to moderate, beneficial effects on health and safety.

The no-action alternative would have minor to moderate, adverse contributions to cumulative effects in the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have long-term, negligible to minor, beneficial impacts on health and safety.

Conclusion. Under the no-action alternative, current road and related deficiencies would continue to constitute a long-term, minor to moderate, adverse impact to health and safety. Cumulative impacts, in conjunction with the no-action alternative, would have long-term, negligible to minor, beneficial impacts on health and safety.

ENVIRONMENTAL CONSEQUENCES—ALTERNATIVE 2: PREFERRED ALTERNATIVE

Soils

The preferred alternative would generate less than one acre of new soil disturbance associated with road work (paving, shoulder support, cut/fill slopes, ditches) that extends beyond the existing edge of the road and the roadside berms and the construction of the parking area at the entrance.

The old boundary turnout would be allowed to return to its natural condition and approximately 1.0 acre of the Mixing Table area would be recontoured and allowed to return to a natural condition; however, these areas would not be actively revegetated. Most roadside berms would be pulled in and used for shouldering, except where they are covered with dense vegetation. Restoration efforts would reduce scarring and loss of soil through erosion. Natural soil processes would be restored only over the long term, as soil structure slowly returns to a more natural condition in this desert environment.

No blasting activities should be required; however, some trampling and soil compaction by equipment and workers within the work area boundaries is expected. Soils occupying much of the work area have been previously disturbed by road-related activities. Local soil compaction would temporarily decrease permeability, alter soil moisture content, and diminish the water storage capacity of these generally xeric soils. Surface disturbance to desert soils would also increase susceptibility to erosion during precipitation events. Construction activities associated with the preferred alternative would have short-term, negligible, adverse impacts on desert soils. Over the long term, soils would return to pre-construction conditions. Less than one acre would be permanently disturbed. The long-term impacts to soils would be negligible and beneficial.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect soils include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374); the Badwater visitor use area improvements; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Ground disturbance associated with construction activities such as regrading and resurfacing roads, shoulder reconstruction, culvert replacements/extensions, pipeline installation, and facility improvement/construction, would have short- and long-term, negligible to minor, adverse impacts on soils.

The preferred alternative would have negligible, adverse contributions to the cumulative impacts on soils in the short term and long term, negligible, beneficial. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have short- and long-term, negligible to minor, adverse impacts on soils.

Conclusion. Construction activities associated with the preferred alternative would have short-term, negligible, adverse impacts on desert soils. The long-term impacts to soils would be negligible and beneficial.

The cumulative effects of these cumulative actions, in conjunction with the preferred alternative, would have short- and long-term, negligible to minor, adverse impacts on soils.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources and values.

Vegetation

Generally, construction activities associated with the preferred alternative would impact previously disturbed areas, and currently paved or graveled surface areas that do not support vegetation. An estimated 0.62 acre of roadside habitat, which consists of native and non-native plant species, would be affected by these project construction activities. This would have short-term, negligible, adverse impacts on vegetation.

The old boundary turnout would be allowed to return to its natural condition and approximately 1.0 acre of the Mixing Table area would be recontoured and allowed to return to a natural condition; however, these areas would not be actively revegetated. Roadside berms would be flattened, taking care to preserve existing vegetation and the seedbed where possible. The overall project activities would have a local, long-term, negligible, beneficial effect on vegetation.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect vegetation include other roadway-related projects (e.g., the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374), the waterline replacement in the Cow Creek area, the Furnace Creek water system update, and the Phase II DEVA 500 project at Furnace Creek. Disturbance associated with construction activities such as regrading and resurfacing roads, shoulder reconstruction, culvert replacements/extensions, pipeline installation, and facility improvement/construction, would have short- and long-term, negligible to minor, adverse impacts on vegetation.

The waterline replacement in the Cow Creek area and the Phase II of DEVA 500 project would have long-term, minor, adverse impacts on vegetation as a result of trenching activities and facility improvements/construction that disturb or cover plant communities. The Furnace Creek water system update would change withdrawal scenarios and pumping/piping systems, affecting the availability and flow of water, which in turn could affect the distribution of riparian vegetation.

The preferred alternative would have negligible, adverse contributions to the cumulative impacts on vegetation in the short term and negligible beneficial effects in the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have short- and long-term, negligible to minor, adverse impacts on vegetation however, the preferred alternative would provide negligible contributions to the cumulative impacts.

Conclusion. The road construction would have short-term, negligible, adverse impacts on vegetation. Local, long-term, negligible, beneficial effects on vegetation would result from allowing disturbed areas to return to more natural conditions. The cumulative effects of past, present, and reasonably foreseeable future actions, in association with the preferred alternative, would have short- and long-term, negligible to minor, adverse impacts on vegetation; however, the preferred alternative would provide negligible contributions to the cumulative impacts.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources and values.

Wildlife

Noise and human presence during construction activities would cause short-term impacts to wildlife species; however, these impacts would be temporary and wildlife usage would return to normal as construction is completed. During construction, some wildlife, particularly small mammals and reptiles, would be temporarily displaced. Some individuals would be killed outright or would be dispersed outside the construction limits and become susceptible to predation or competitive stress. This displacement would result in a slight population depression adjacent to the corridor, however, following project completion, wildlife would reoccupy suitable habitat in the project area. It is likely that certain larger species such as the mule deer and coyote would avoid the road corridor during construction. Other large species (i.e., common raven) may be more visible as prey species are flushed or uncovered during ground disturbance or are made available as carrion. These are expected to have local, short-term, negligible to minor, adverse impacts on wildlife.

When construction is complete, disturbed soil areas would be graded and measures would be taken to minimize invasion by non-native species. The old boundary turnout would be allowed to return to its natural condition and approximately 1.0 acre of the Mixing Table area would be recontoured and allowed to return to a natural condition; however, these areas would not be actively revegetated. This would have a long-term, negligible, beneficial effect on wildlife.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect wildlife include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374); the Badwater visitor use area improvements; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Construction noise, as well as habitat disturbance/loss associated with construction activities such as regrading and resurfacing roads, shoulder reconstruction, culvert replacements/extensions, pipeline installation, and facility improvement/construction, would have short- and long-term, negligible to minor, adverse impacts on wildlife.

The Furnace Creek water system update would change withdrawal scenarios and pumping/piping systems, affecting the availability and flow of water, which in turn could affect the distribution of wildlife habitat or individual species dependent on the creek. The preferred alternative would have negligible, adverse contributions to the cumulative impacts on wildlife in the short-term.

The preferred alternative would have negligible to minor, adverse contributions to the cumulative impacts on wildlife in the short term and negligible beneficial effects on wildlife in

the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have short- and long-term, negligible to minor, adverse impacts on wildlife.

Conclusion. During construction, the preferred alternative would have short-term, negligible to minor, adverse impacts on wildlife. Once the project is complete, there would be negligible beneficial effects on wildlife. The preferred alternative would not appreciably change cumulative effects, which would be short- and long-term, negligible to minor, adverse impacts on wildlife.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources and values.

Special-Status Species (Threatened and Endangered Species and Species of Concern)

Based on the species list provided by the U.S. Fish and Wildlife Service (appendix B), the primary special-status species of concern is the desert tortoise. During the Mud Canyon / Daylight Pass Road Project, some direct effects to the desert tortoise would be anticipated from increased levels of human activity, noise, and the ground vibrations produced by vehicles and heavy equipment. These would be short-term impacts, and would be negligible to minor and adverse. Long-term, negligible, adverse impacts due to continued road use may be an indirect effect of both the no-action alternative and the preferred alternative as such use would continue to affect the desert tortoise populations adjacent to the roadway. Such impacts are considered negligible as this road has been in use for a long time and desert tortoise density along the road is low. Long-term, minor, adverse impacts may be a direct result of continued use of the Mixing Table as a staging area. Negligible to minor, long-term, beneficial impacts may be direct results from recovery of potential desert tortoise habitat at various sites within the project and through restoration of the borrow pit area at the Mixing Table. Overall impacts to the desert tortoise would be short term, negligible to minor and adverse and long term, negligible beneficial.

Any project work north of the roadway at Daylight Pass would negatively impact Reveal's buckwheat. Because this buckwheat is more common in Nevada and is found in large populations (usually over 1,000 plants) throughout the east side of the park during "wet years," adverse impacts to the Daylight Pass population are expected to be short term and negligible when the mitigation measures outlined in the mitigation discussion are implemented.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect special-status species include other roadway-related projects (e.g., the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374), the waterline replacement in the Cow Creek area, the Furnace Creek water system update, and the Phase II DEVA 500 project at Furnace Creek. Construction noise, as

well as habitat disturbance/loss associated with construction activities such as regrading and resurfacing roads, shoulder reconstruction, culvert replacements/extensions, pipeline installation, and facility improvement/construction, would have short- and long-term, negligible to minor, adverse impacts on threatened and endangered species and species of special concern.

The Furnace Creek water system update would change withdrawal scenarios and pumping/piping systems, affecting the availability and flow of water, which in turn could affect the distribution of special-status species dependent on the creek and its associated vegetation communities. The preferred alternative would have negligible, adverse contributions to the cumulative impacts on special-status species in the short term, and negligible, beneficial effects in the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have short- and long-term, negligible to minor, adverse impacts on special-status species.

Conclusion. The proposed project would occur in the northern limits of the desert tortoise species' range. Densities in this area are estimated at 20 individuals per square mile, suggest that the area does not support viable populations, and suggest that observed individuals or signs of habitation may represent fringe dispersal, captive releases, or misidentified burrows. Impacts to individuals and habitat in the project area would be minimized through proposed mitigation measures. Overall impacts to the desert tortoise would be short term, negligible to minor, and adverse and long term, negligible, beneficial. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have short- and long-term, negligible to minor, adverse impacts on threatened and endangered species and species of special concern.

Impairment of Park Resources and Values. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of park resources and values.

Visitor Use and Experience

During construction, visitors would experience some delays. Mitigation requires, however, that the delays be limited to 30 minutes. Short-term impacts would be minor and adverse in nature.

Upon completion of the preferred alternative, the repaired road surface, wider travel lanes, better sight lines, and improved signage would improve driving conditions. Although it is not anticipated that the road condition would have any impact on visitation numbers, the driving experience would be improved resulting in a long-term, minor, beneficial effect.

The construction of a small parking area at the park entrance ; changes in the Daylight Pass parking area; installation of pedestrian crossing signs, removal of trash receptacles, and a universally accessible concrete walkway at Hells Gate would all benefit visitors using those

facilities. These changes would constitute a long-term, minor, beneficial effect to visitor use and experience.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect visitor experience include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374); the Badwater visitor use area improvements; the waterline replacement in the Cow Creek area; the Furnace Creek water system update; and the Phase II DEVA 500 project at Furnace Creek. Construction noise, the presence of construction equipment, and construction-related traffic delays or facility closures would have short-term, negligible to minor, adverse impacts on visitor experience for the duration of the construction activities.

However, improvements associated with each of these projects (e.g., rehabilitated road surfaces, improved accessibility and parking, improved infrastructure, and new or rehabilitated facilities) would have long-term, minor, beneficial effects on visitor experience. The preferred alternative would have minor, beneficial contributions to cumulative effects in the long term and minor adverse effects in the short term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have negligible to minor, adverse, impacts on visitor experience in the short term and negligible to minor beneficial impacts in the long term.

Conclusion. The preferred alternative would have short-term, minor, adverse impacts. Upon completion of the preferred alternative, there would be long-term, minor, beneficial effects on visitor experience. The cumulative effects of the preferred alternative would be negligible to minor and adverse in the short term and negligible to minor and beneficial in the long term.

Health and Safety

The preferred alternative would include repaving and repairing raveling edges and soft shoulders and improving site distances and reconfiguring the parking area at the top of Daylight Pass. The “Y” intersection at Hells Gate would be improved by repainting the road and providing better signage, the acceleration lane would be lengthened, and pedestrian crossing signs would be added to warn motorists of individuals crossing the road. At the Bonnie Claire Road intersection, the stop sign would be enlarged and/or made reflective, rumble strips would be created to warn motorists of the stop ahead, and a wider apron would be paved to cover areas where motorists tend to cut the turns from Bonnie Claire Road onto Mud Canyon / Daylight Pass Road. These improvements constitute a long-term, moderate, beneficial impact to health and safety.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect health and safety include other roadway-related projects (e.g., the rehabilitation of Badwater Road, the rehabilitation of the Bonnie Claire / Ubehebe Crater Road, and improvements to California State Route 374), the Badwater visitor use area improvements, the waterline replacement in the Cow Creek area, the Furnace Creek water system update, and the Phase II DEVA 500 project at Furnace Creek. Improvements associated with each of these projects (e.g., rehabilitated road surfaces, improved accessibility and

parking, improved infrastructure, and new or rehabilitated facilities) would have long-term, minor to moderate, beneficial effects on health and safety.

The preferred alternative would have moderate, beneficial contributions to cumulative effects in the long term. The cumulative effects of these past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have long-term, minor to moderate, beneficial effects on health and safety.

Conclusion. Under the preferred alternative, road improvements would constitute a long-term, moderate, beneficial effect to health and safety. Cumulative impacts, in conjunction with the no-action alternative, would have long-term, minor to moderate, beneficial effects on health and safety.

CONSULTATION AND COORDINATION

SCOPING

Scoping is the effort to involve agencies and the general public in determining the scope of issues to be addressed in the environmental document. Among other tasks, scoping determines important issues and eliminates issues not important; allocates assignments among the interdisciplinary team members and/or other participating agencies; identifies related projects and associated documents; identifies other permits, surveys, consultations, etc. required by other agencies; and creates a schedule that allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made. Scoping includes any interested agency, or any agency with jurisdiction by law or expertise (including the Advisory Council on Historic Preservation, the California SHPO, and American Indian tribes) to obtain early input.

Staff of Death Valley National Park, Federal Highway Administration, and resource professionals of the National Park Service, Denver Service Center, conducted internal scoping. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the proposed action to other planning efforts at the park.

A press release initiating public scoping and describing the proposed action was issued January 22, 2004 (appendix A). No comments were received.

AGENCY CONSULTATION AND PERMITTING

The undertakings described in this document are subject to section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*). The National Park Service conducted a survey for historic properties in July and August of 2003, and found seven sites within the area of potential effect for this project (Turner 2003). Of the sites recorded, a small previously disturbed portion of one of the sites would be actively impacted by the project. An archeologist will be present monitoring all work in the area of the site. Consultation with the California and Nevada SHPOs and the Timbisha Shoshone Tribe will occur before any work is done on the site. A copy of this environmental assessment will be sent to the California and Nevada SHPOs.

In accordance with section 7(c) of the Endangered Species Act of 1973, as amended (16 USC 1531 *et seq.*), it is the responsibility of the federal agency proposing the action (in this case the National Park Service) to determine whether the proposed action would adversely affect any listed species or designated critical habitat; this determination is documented in a biological assessment prepared and delivered to the U.S. Fish and Wildlife Service on February 17, 2004 (appendix C).

The U.S. Army Corps of Engineers was contacted regarding the removal of a section of gabion baskets protecting the road from a nearby drainage. The response indicated that as long as the work removed the baskets using an excavator or backhoe and did not place fill within the drainage channel, no permit will be required.

A National Pollutant Discharge Elimination System permit for storm water drainage will likely be required for prevent of pollution to drainages in the project vicinity. Stormwater runoff from the road work will be controlled through appropriate sediment and storm water control measures.

Regulatory Citations

- Act of August 25, 1916 (National Park Service Organic Act), PL 64-235, 16 USC § 1 *et seq.* as amended.
- National Historic Preservation Act, as amended, PL 89-665, 80 Stat. 915, 16 USC § 470 *et seq.* and 36 CFR 18, 60, 61, 63, 68, 79, 800.
- Native American Graves Protection and Repatriation Act, PL 101-601, 104 Stat. 3049, 25 USC §§ 3001-3013.
- Presidential Memorandum of April 29, 1994 "Government-to-Government Relations with Native American Tribal Governments," 59 FR 85.
- Clean Air Act, as amended, PL Chapter 360, 69 Stat. 322, 42 USC § 7401 *et seq.*
- Endangered Species Act of 1973, as amended, PL 93-205, 87 Stat. 884, 16 USC § 1531 *et seq.*
- Executive Order 11988: Flood Plain Management, 42 FR 26951, 3 CFR 121 (Supp 177).
- Executive Order 11990: Protection of Wetlands, 42 FR 26961, 3 CFR 121 (Supp 177).
- Executive Order 11991: Protection and Enhancement of Environmental Quality.
- Executive Order 13007, Indian Sacred Sites (61 CFR 26771)
- Farmland Protection Policy Act of 1982, PL 97-98.
- Federal Water Pollution Control Act (commonly referred to as Clean Water Act), PL 92-500, 33 USC § 1251 *et seq.*, as amended by the Clean Water Act, PL 95-217.
- Fish and Wildlife Coordination Act of 1958, as amended, PL 85-624, 72 Stat. 563, 16 USC § 661 *et seq.*
- National Environmental Policy Act of 1969, PL 91-190, 83 Stat. 852, 42 USC § 4321 *et seq.*
- Programmatic Memorandum of Agreement among the National Park Service, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995).
- Protection and Enhancement of Environmental Quality, Executive Order 11514, as amended, 1970, Executive Order 11991, 35 *Federal Register* 4247; 1977, 42 *Federal Register* 26967).
- Resource Conservation and Recovery Act, PL 94-580, 30 Stat. 1148, 42 USC § 6901 *et seq.*
- Secretarial Order 3175, Departmental Responsibility for Indian Trust Resources.
- Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (36 CFR 68).
- Soil and Water Resources Conservation Act of 1977.

- Watershed Protection and Flood Prevention Act, PL 92-419, 68 Stat. 666, 16 USC § 100186.

LIST OF PREPARERS

This environmental assessment was prepared by engineering-environmental Management, Inc., under the direction of the National Park Service. Denver Service Center and Death Valley National Park staff provided invaluable assistance in the development and technical review of this environmental assessment. National Park Service staff who provided information include:

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Jon Christensen – Landscape Architect
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Linda Greene – Chief, Resource Management
Ainsley Holeso – Roads Supervisor
Linda Manning – Biologist
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BIBLIOGRAPHY

Brown, P.R.

1968 Residents of the Golden State. International Turtle and Tortoise Society Journal. 2(6):28-9.

Harris, Ann G., Esther Tuttle, and Sherwood D. Tuttle

1997 Geology of National Parks, Revised Printing, Fifth Edition, Chapter 46, Death Valley National Park.

Luckenbach, R.A.

1982 Ecology and management of the desert tortoise (GOPHERUS AGASSIZII) in California. Pp. 1-37 in Bury. R. B. (ed.). 1982. North American Tortoise Conservation and Ecology. Wildlife Res. Rep. 12. U.S. Fish and Wildlife Service, Washington, DC.

National Park Service (NPS)

2000 Environmental Assessment for Road Realignment of Three Dangerous Curves on Daylight Pass Road. September 2000.

2002 *Death Valley National Park General Management Plan*. April 2002. Available: http://www.nps.gov/deva/Deva_gmp/DEVA_GMP.htm

2003 Botanical Survey Report for Daylight Pass/Mud Canyon Roads. Prepared by Dana York, Botanist, Death Valley National Park. September 23, 2003.

2003a Animals of Death Valley National Park. Available: http://data2.itc.nps.gov/nature/animals.cfm?alphacode=deva&loc=1.

2003b Air Quality at Death Valley National Park. Available: http://data2.itc.nps.gov/nature/subenvironmentalfactors.cfm?alphacode=deva&topic=23&loc=3.

2003c Linda Manning, Email notifications of tortoise sightings along Daylight Pass / Mud Canyon Road. Emails dated 8/26/03, 9/20/03, and 9/24/03.

2004 Wild and Scenic Rivers. Available: http://nps.gov/rivers.

2004a Terry Fisk, Personal Communication, May 2004.

2004b Linda Greene, Personal Communication, April and May 2004.

Niblick, H.A. et al.

1994 Role of male-male interactions and female choice in the mating system of the desert tortoise, GOPHERUS AGASSIZII. Herpetological Monographs 8:124-32.

Okamoto, C.L.
1995 Color, calcium, and insect choice trials performed with captive juvenile desert tortoises (GOPHERUS AGASSIZII). California State University, Dominguez Hills, Carson, CA. M.A. Thesis.

Turner, F.B., P. Hayden, B.L. Burge, and J.B. Roberson.
1986 Egg production by the desert tortoise (*GOPHERUS AGASSIZII*) in California. Herpetologica 42:93-104.

Turner, F.B., P.A. Medica, and C.L. Lyons.
1984 Reproduction and survival of the desert tortoise (*SCAPTOCHELYS AGASSIZII*) in Ivanpah Valley, California. Copeia 1984:811-820.

Turner, Kelly Jaggers.
2003 Death Valley National Park Cultural Resource Management Report, 2003-4: 2003 Road Surveys: Cultural resources Assessment for Mud Canyon and Daylight Pass Road Survey, Inyo County CA.

U.S. Fish and Wildlife Service (USFWS)
1994 The desert tortoise (Mojave population) recovery plan. U.S. Fish and Wildlife Service, Region 1-Lead Region, Portland, Oregon. 73 pp. + appendices.

Weatherwax, M. (managing ed.)
2002 The Jepson Desert Manual. Vascular Plants of Southeastern California. University of California Press, Berkeley and Los Angeles, CA.

Woodbury, A.M. and R. Hardy.
1948 Studies of the desert tortoise, *GOPHERUS AGASSIZII*. Ecological Monographs. 18(2):145-200.

Woodman
2003 Desert tortoise survey for a proposed highway refurbishment in Death Valley National Park, California. Kiva Biological Consulting. 9 pp.

APPENDIX A

NATIONAL PARK SERVICE PRESS RELEASE

APPENDIX A

National Park Service
U.S. Department of the Interior

Death Valley
National Park

CA Highway 190
PO Box 579
Death Valley, CA 92328

phone 760.786.3243
fax 760.786.3246

Death Valley News Release

Release Date: **FOR IMMEDIATE RELEASE**
Release Number: 01/04-01
Contact: Kat Eisenman, Public Information Officer
Phone: 760.786.3243
Date: 01/22/04

Death Valley National Park Plans to Rehabilitate the Mud Canyon/Daylight Pass Road

Death Valley, CA – Superintendent James T. Reynolds announced that Death Valley National Park proposes to rehabilitate the Mud Canyon/Daylight Pass Road. The purpose of this project is to rehabilitate, restore, and resurface approximately 17.2 miles of Daylight Pass/Mud Canyon Road from the southwest terminus at the intersection with Bonnie Claire Road (park route 5 - milepost 0.0) and proceeding northeasterly to the boundary of Death Valley National Park.

Superintendent Reynolds said that the project is in the planning stages now and construction is expected to begin in late 2004. The public is invited to direct concerns or comments regarding this project to Superintendent Reynolds at 760-786-3243, or by sending an email to DEVA_Superintendent@nps.gov, or by writing him at Death Valley National Park, PO Box 579, Death Valley, CA92328.

-NPS-

APPENDIX A

APPENDIX B

CONSULTATION AND COORDINATION LETTERS

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

Received
APR 02 2004
DSC-T

In Reply, refer to:PAS: 1169-1280-1700

March 30, 2004

Ken Hartwig
National Park Service
Denver Service Center
12795 W. Alameda Parkway
Denver, Colorado 80225

Subject: List of Federally Threatened and Endangered Species - Daylight Pass/Mud Canyon Road

Dear Mr. Hartwig:

We are responding to your request, dated October 14, 2003, and received in our office on October 17, 2003, for a list of endangered and threatened species that may occur in the vicinity of Daylight Pass/Mud Canyon Road from the southwest terminus at the intersection with Bonnie Claire Road and proceeding northeasterly to the boundary of Death Valley National Park. We understand the National Park Service is the lead Federal agency for the project, and that it would assume responsibility under section 7 of the Endangered Species Act of 1973, as amended (Act).

The National Park Service is initiating planning to rehabilitate the Daylight Pass/Mud Canyon Road at Death Valley National Park, Inyo County, California. The purpose of this project is to rehabilitate, restore, and resurface (3R) approximately 17.2 miles of Daylight Pass/ Mud Canyon Road from the southwest terminus at the intersection with Bonnie Claire Road (milepost 0.0) and proceeding northeasterly to the boundary of Death Valley National Park.

The enclosed list of species fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Act. The National Park Service has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a construction project which may require an environmental impact statement[1], the National Park Service has the

[1] "Construction project" means any major Federal action which significantly affects the quality of the human environment designed primarily to result in the building of structures such as dams, buildings, roads, pipelines, and channels. This includes Federal actions such as permits, grants, licenses, or other forms of Federal authorizations or approval which may result in construction.

responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the National Park Service determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species or their critical habitat prior to a written request for formal consultation. During this review process, the National Park Service may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and

Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occurin this area.

If you have any questions regarding this letter, please contact Robert McMorran of my staff at (805) 644-1766.

Sincerely,

Judy Hohman

Judy Hohman
Division Chief
Mojave Desert/Great Basin Desert

LISTED AND PROPOSED SPECIES
WHICH MAY OCCUR IN THE VICINITY OF
DAYLIGHT PASS/MUD CANYON ROAD, INYO COUNTY, CALIFORNIA

Reptiles	Scientific Name	Status
Desert tortoise	*Gopherus agassizii*	T

APPENDIX C

BIOLOGICAL ASSESSMENT

National Park Service
U.S. Department of the Interior

Death Valley National Park
California and Nevada

Biological Assessment

Rehabilitate Mud Canyon / Daylight Pass Road

February 2004

BIOLOGICAL ASSESSMENT

Rehabilitate Mud Canyon / Daylight Pass Road

Prepared For:
National Park Service

Prepared By:
engineering-environmental Management, Inc.

Death Valley National Park
California and Nevada

CONTENTS

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
cm	Centimeter
mm	Millimeter
NPS	National Park Service
USC	United States Code

INTRODUCTION

In accordance with section 7(c) of the Endangered Species Act of 1973, as amended (16 *United States Code* (USC) 1531 *et seq.*), the National Park Service (NPS) requested from the U.S. Fish and Wildlife Service a species list of threatened and endangered species, species of concern, and designated critical habitats that may be affected by the National Park Service's proposed action to rehabilitate Mud Canyon / Daylight Pass Road in Death Valley National Park. It is the responsibility of the federal agency proposing the action, in this case the National Park Service, to determine whether the proposed action would adversely affect any listed species or designated critical habitat; this determination is documented in a biological assessment. The objective of a biological assessment is to determine whether an endangered or threatened species is likely to be adversely affected by the proposed action.

This biological assessment addresses the threatened desert tortoise (*Gopherus agassizii*), listed by the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act of 1973, as amended, relative to the Rehabilitate Mud Canyon / Daylight Pass Road project in Death Valley National Park. Mud Canyon / Daylight Pass Road is proposed for rehabilitation, restoration, and resurfacing to enhance visitor safety and to protect natural resources. Rehabilitation would occur along the entire 17.2-mile-long road segment and would include resurfacing and widening the road, tying in to previous realignments, flattening some curves for sight distance, installing concrete barriers to control drainage, and redesigning the parking areas at Hells Gate, Daylight Pass, and the eastern park boundary on Highway 374 (figure 1). The determination of effect on the desert tortoise for the Rehabilitate Mud Canyon / Daylight Pass Road project in Death Valley National Park is "*may affect, likely to adversely affect*."

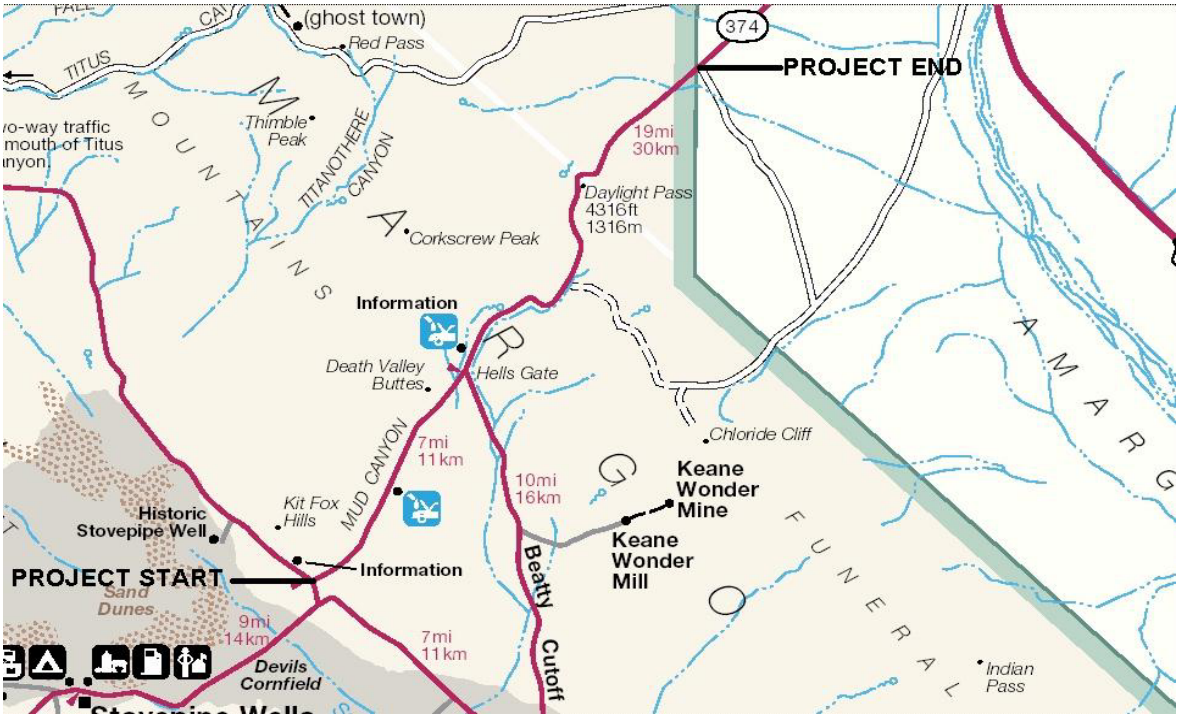

FIGURE 1. PROJECT LOCATION MAP

BACKGROUND

CONSULTATION HISTORY

The U.S. Fish and Wildlife Service was contacted by letter dated October 14, 2003 (see appendix A) to request a list of threatened and endangered species that may occur in or use the Keys View Road reconstruction area for habitat. The U.S. Fish and Wildlife Service provided verbal confirmation that the only threatened and endangered species that may occur in or depend on the Mud Canyon / Daylight Pass Road project area is the federally threatened desert tortoise (*Gopherus agassizii*) (USFWS 2003, pers. comm.). The project area does not include any designated critical habitat (USFWS 1994); however, it does traverse approximately 10.5 miles of potentially suitable habitat based on vegetative communities present and on sightings of desert tortoises within that portion of the project area.

The National Park Service conducted a presence/absence survey in April 2003, in which one adult male desert tortoise, measuring 310-mm mid-carapace length, was found in the zone of influence transect that was 2,400 feet from the boundary of the project work area. No other desert tortoises or sign (e.g. burrows or scat) were observed in either the project area or the zone of influence transects during this survey (Woodman 2003).

DESCRIPTION OF THE PREFERRED ALTERNATIVE

The National Park Service is considering rehabilitation, restoration, and resurfacing of Mud Canyon / Daylight Pass Road in Death Valley National Park. This approximately 17.2-mile stretch of road begins at Bonnie Claire Road and continues northeasterly to the park boundary in Nevada. Any proposed action, such as the Rehabilitate Mud Canyon / Daylight Pass Road project, must comply with the primary management objectives of Death Valley National Park as stated in the approved *General Management Plan* (GMP 2001). These management objectives promote the mission of the park, which is to protect significant desert features that provide world class scenic, scientific, and educational opportunities for visitors and academics to explore and study. The 2001 *General Management Plan* indicated that the current road management plan for Death Valley National Park will be reevaluated because of changes in visitor use patterns, the addition of more roads from park boundary expansion, and a need to readjust maintenance priorities in reaction to changes in funding levels. The philosophy of the new road management plan will be to protect cultural and natural resources and enhance the visitor experience, while providing for safe and efficient accommodation of park visitors. As such, no new roads are anticipated unless there is strong justification to do so. However, current paved roadways will need to be maintained to provide for safe and efficient travel by visitors.

General Description of Road Work

The rehabilitate Mud Canyon / Daylight Pass Road project would begin near the Bonnie Claire intersection with Mud Canyon Road and extend northeasterly to the park entrance,

approximately 17.2 miles. Three curves on Mud Canyon / Daylight Pass Road, between the intersection with Bonnie Claire Road and Hells Gate, were realigned for safety reasons during 2001. The existing paved width of the roadway varies from 20- to 22-feet wide, with 2- to 15-foot-wide unpaved shoulders. The proposed action would widen this to a standard 24-foot width (two 11-foot lanes with 1-foot shoulders) and address pavement rutting and cracking. The proposed roadway cross-section would be predominantly constructed on the existing roadway alignment without impacting cut and fill slopes. Minor shifts in the roadway alignment to improve sight distance for motorists would occur in four areas. Paved ditches would be modified or replaced in five areas, and new paved ditches would be constructed in four areas for better control of drainage and to reduce erosion.

The primary contractor staging area would be the area known as the Mixing Table, which is approximately 0.5 mile south of Mud Canyon / Daylight Pass Road and is accessed by a gravel road (figure 2). The specific area within the Mixing Table that would be used as a staging area is approximately 200-meters long and 20-meters wide. This area could also be used for temporary storage of desert topsoil. An alternate or additional staging area would be the Sunset Campground overflow near Furnace Creek.

FIGURE 2. MIXING TABLE STAGING AREA

Construction would begin as early as October of 2004, and continue until June of 2005. Some of the higher-elevation sections of the project area do typically receive snow during the winter months that could delay the road rehabilitation project. This potential delay has been incorporated into the proposed schedule. No traffic delays would be allowed over holiday weekends. Mud Canyon / Daylight Pass Road would be closed during construction between

Bonnie Claire Road and Beatty Cutoff Road. Mud Canyon / Daylight Pass Road between Beatty Cutoff Road and the park boundary would remain open during construction; however, traffic control would be necessary and delays of up to 30 minutes could occur with a maximum of 10 minutes during heavy commuting times between 5:00 A.M. and 8:00 A.M. School buses would be allowed through the construction zone as quickly as possible.

The following list describes actions that would be taken as part of the project. All station references (e.g., Sta. 12+920 to Sta. 13+060) are based on the 50% construction plans (appendix B).

Bonnie Claire Road / Mud Canyon Intersection

- Provide for proper turning radius at this intersection.
- Add rumble strips in advance of the intersection for additional driver notification.

Three Previously Realigned Curves

- Develop tie-ins with the three curves that were realigned in 2001 during a safety improvement project (figure 3).
- 11-foot lanes would be striped through these previously constructed curve areas along with the rest of the project.
- Replace and adjust the placement of delineators on the three curves.

Hells Gate

- Improvement of the rest stop at Hells Gate would provide for improved universal accessibility, a painted island, and sidewalks and pedestrian areas that would be colored concrete or a soil stabilized surface. These improvements would occur within the current footprint of the rest stop.
- Edge lines would be added to delineate the pavement split at the intersection. The gore of unpaved area between the arms of the intersection would be paved and slopes and chevrons or painted stripes would be added to delineate the two travel surfaces. Directional signs would be relocated to provide better warning of the upcoming intersection. All of these efforts would provide enhanced delineation of the intersection at Hells Gate. These improvements would not expand the current road corridor (figure 4).
- Pedestrian area signs would be added to all three legs of the intersection.

FIGURE 3. CURVE REALIGNMENT WITH CURRENT TIE-IN TO OLDER ROAD SEGMENT

FIGURE 4. INTERSECTION AT HELLS GATE

- Approximately 150 feet of buried concrete barrier would be added on the east side, adjacent to the acceleration lane, to help reduce pavement undercutting erosion where a drainage channel crosses the road. The addition of the buried concrete barrier would occur within the current footprint of the road, resulting in no additional disturbance.

Mixing Table (Contractor Staging Area)

- The "Mixing Table" is a previously disturbed area, only a portion of which (200-meters long by 20-meters wide) would continue to be used as a staging area. The remainder of the disturbed area would be restored to a more natural condition through recontouring as part of this project.

Gabion Erosion Control Fencing

- Removal of the gabion erosion control fencing and regrading of the roadside berms would be completed between approximately Sta. 12+920 to Sta. 13+060.

Daylight Pass

- The roadway alignment would be lowered to improve the stopping sight distance. To avoid cutting the existing slope on the east side of the roadway, the alignment would be shifted to the west by approximately 12 feet. A paved ditch would be constructed along the east side of the roadway. The topsoil in the existing windrow would be placed in a newly-constructed island.
- The revised layout of the parking area (figure 5) would include 10-foot paved aprons at two separate access points. The access points would be separated by a rock-lined island to help define and control access. Topsoil from the realignment windrow and from existing roadside berms would be placed within the island. The parking area would not be extended outside of the existing footprint.
- A culvert would be placed at approximately Sta. 21+770 for drainage purposes. The culvert would be placed on grade with natural ground at both the inlet and outlet ends, and riprap would be placed at the culvert outlet.

Park Boundary

- The current cattle guard at the park boundary would be replaced with a new one that would span the wider road section (figure 6). The cattle guard is necessary for burro control. The new cattle guard will be a tortoise friendly design with metal bars spaced 20 centimeters (cm) apart and a depth of no more than 24 inches. The new cattle guard will be sloped to allow animals to crawl from the ditch. Periodic maintenance will be performed to ensure that the cattle guard remains open and clear of debris. Construction details for the new cattle guard are provided in appendix C.

FIGURE 5. DAYLIGHT PASS PARKING AREA

FIGURE 6. CATTLE GUARD AT PARK BOUNDARY

- A new turnout parking area would be developed 200 feet west of the park boundary. This would be a paved turnout with curb and gutter. The parking area would have a colored concrete or soil stabilized sidewalk and a new entrance sign, and would accommodate six cars or two recreational vehicles.
- The existing, informal parking area would be allowed to return to its native condition.

In addition to these site-specific improvements, horizontal and vertical road realignments to improve sight distance, and improvement of paved ditches between Bonnie Claire Road and the park boundary to control drainage, would occur. These actions would not result in additional disruption of habitat as all work would occur within the already disturbed footprint of the road. These actions are as follows:

Roadway Horizontal Alignment Changes

- STA. 20 + 300 – STA. 20 + 500 (3-FOOT MAXIMUM SHIFT TO WEST SIDE)
- STA. 21 + 560 – STA. 22 + 240 (DAYLIGHT PASS, 12 FOOT MAXIMUM SHIFT TO WEST SIDE)
- STA. 23 + 200 – STA. 23 + 400 (4-FOOT MAXIMUM SHIFT TO EAST SIDE)
- STA. 24 + 640 – STA. 24 + 840 (4-FOOT MAXIMUM SHIFT TO EAST SIDE)

Roadway Vertical Alignment Changes

- Sta. 26 + 470 – Sta. 26 + 784
- Sta. 26 + 880 – Sta. 27 + 060
- Sta. 21 + 620 – Sta. 21 + 799
- As a crowned roadway section would result in ponding on the upstream side, the roadway design would allow for drainage across the roadway along this section.

Paved ditches between Bonnie Claire Road and the park boundary would be constructed, or existing ditches modified at the following locations:

- STA. 2 + 200 – STA. 2 + 300
- STA. 2 + 650 – STA. 2 + 920
- STA. 3 + 510 – STA. 3 + 630
- STA. 4 + 050 – STA. 4 + 340
- STA. 4 + 680 – STA. 4 + 750, NEW PAVED DITCH LT
- STA. 21 + 630 – STA. 21 + 749 RT
- STA. 21 + 799 – STA. 21 + 829 RT
- STA. 21 + 919 – STA. 22 + 218 RT
- STA. 22 + 395 – STA. 22 + 425 RT

TYPICAL PAVED DITCHES WOULD BE 1.2 METERS WIDE AND HAVE A SLOPE OF 1:10.

Miscellaneous

- The water tank turnout at approximately Sta. 5 + 850 would be removed.
- An option for removing or recontouring the roadside berms, similar to that used on the Badwater Road project (Project No. CA PRA DEVA 15(1)) could be included. In this option, the roadside berms would be graded to the natural contour and allowed to return to their native condition (i.e., they would not be periodically regraded to keep vegetation out).

Construction Plans

Detailed preliminary construction plans (50% complete) have been prepared and are attached for reference, to more fully comprehend the project scale (appendix B).

DESCRIPTION OF THE PROJECT AREA

Death Valley National Park includes all of Death Valley, a long trough that runs roughly north to south for 156 miles between two major block-faulted mountain ranges, the Amargosa Range to the east and the Panamint Range to the west. The highest point in the park, Telescope Peak, at 11,049-feet above sea level, is only 15 miles from the lowest point in the park and in the United States—the Badwater Basin salt pan at 282 feet below sea level. Also included in the park are most of the Saline, Eureka, northern Panamint, and Greenwater valleys. This section describes the existing environment along the rehabilitate Mud Canyon / Daylight Pass Road project. Only the natural resource elements relevant to desert tortoise population establishment and maintenance are addressed within this biological assessment. Other elements are addressed in a broader environmental assessment.

Climate

Air temperature readings over 120 degrees Fahrenheit are common in Death Valley during summer months. Ground temperatures are usually up to 50% higher. Temperatures from November through March are mild, however, with highs averaging in the 60s and 70s. Winter nighttime lows are usually in the 40s.

Very little rain falls in the valley, as it lies in the rain shadow of the Sierra Nevada Mountains to the west. For Death Valley *per se*, average rainfall is less than 2 inches per year. High temperatures and low humidity contribute to an extremely high evaporation rate of 128 inches annually; 77 times the annual precipitation rate. Rainfall in the mountains can cause flash flooding in narrow canyons. The higher elevations of the park are usually covered with snow from November to May. Some of the higher-elevation sections of the project area do typically receive snow during the winter months that could delay the road rehabilitation project. This potential delay has been incorporated into the proposed schedule.

Topography

Mud Canyon / Daylight Pass Road traverses a wide elevational range, beginning at its lowest point of approximately 200-feet above sea level at the intersection with Bonnie Claire Road and climbing eastward to its highest elevation of approximately 4,300-feet above sea level near Daylight Pass. The road then descends again as it approaches and leaves the park boundary to the east at an elevation of approximately 3,500-feet above sea level. The landscape along the road is moderately dissected, providing a full range of slope and aspect combinations.

Vegetation

The approximately 17.2 miles of road corridor impacted by this project traverses an elevational range from 200- to 4,300-feet above sea level, and consequently, passes through several plant communities. The Creosote bush (*Larrea tridentata*) / Creosote bush-white bursage (*Ambrosia dumosa*) community, in which creosote bush is the sole or dominant shrub in the canopy, occurs in alluvial fans, bajadas, and along upland slopes. Soils supporting this community are well-drained and may present pavement surface. This community is common adjacent to Mud Canyon / Daylight Pass Road for much of the 17.2 miles within the project area.

The segment of the project from the Bonnie Claire Road / Mud Canyon intersection (milepost 0) to Hells Gate (milepost 7.2) is a low-elevation (200- to 1,900-feet above sea level), rocky, and sparsely-shrubbed area. Between Hells Gate and the park boundary, elevation ranges from 2,000- to 4,300-feet above sea level, with considerable topographic relief providing a full range of slope and aspect combinations.

The common plant community at lower elevations is the Desert-holly (*Atriplex hymenelytra*) community in which this species is the sole or conspicuous shrub in the canopy. This community is commonly found in dissected alluvial fans and along washes at lower elevations.

Other plant communities occurring along the project area include:

- Brittlebush (*Encelia farinosa*) / Brittlebush-white bursage (*Ambrosia dumosa*)

  In this community, brittlebush is a primary component or may be codominant with California buckwheat shrubs in the canopy. This community occurs in alluvial fans, on bajadas, and along upland slopes. Soils supporting this type of community are typically well-drained and may have desert pavement surface. Within the project area, this community is common adjacent to the road and in washes.

- Fourwing saltbush (*Atriplex canescens*)

  In this community, fourwing saltbush is the sole or dominant shrub in the canopy. This community occurs on bluffs, dunes, rocky slopes at lower elevations, and in washes. Soils supporting this community type may be carbonate-rich. Within the project area, this community is common adjacent to the road and in washes.

Creosote bush, creosote bush-white bursage, and *Atriplex* communities have been identified as providing habitat for desert tortoises (NatureServe, 2003).

STATUS OF LISTED SPECIES / CRITICAL HABITAT WITHIN THE PROJECT VICINITY

The U.S. Fish and Wildlife Service has communicated through personal communication that the only species of concern for this project is the desert tortoise. A discussion of this species' habitat and status within the project area follows.

Desert Tortoise

Background and Biology

Desert tortoises (figure 7) are distributed from southeastern California, southern Nevada, and extreme southwestern Utah, through western and southern Arizona and northern Mexico (NatureServe 2003). They generally occupy habitat receiving an average annual rainfall in excess of 4 inches (10.1 cm) and below 12 inches (30.1 cm). In the northern periphery of their range, they typically occur at elevations between 2000 and 5,000 feet, and occupy a variety of habitats (USFWS 1994; NatureServe 2003). The desert tortoise exhibits significant morphological and genetic variation throughout the range (NatureServe 2003). Populations occurring west of the Colorado River are thought to be distinct from those east of the river in morphology, genetics, behavior, and ecology (Lamb et al. 1989 and Lamb et al. 1994 in NatureServe 2003). Populations of the desert tortoise are listed as threatened within the United States (*Federal Register* April 2, 1990, and NatureServe 2003).

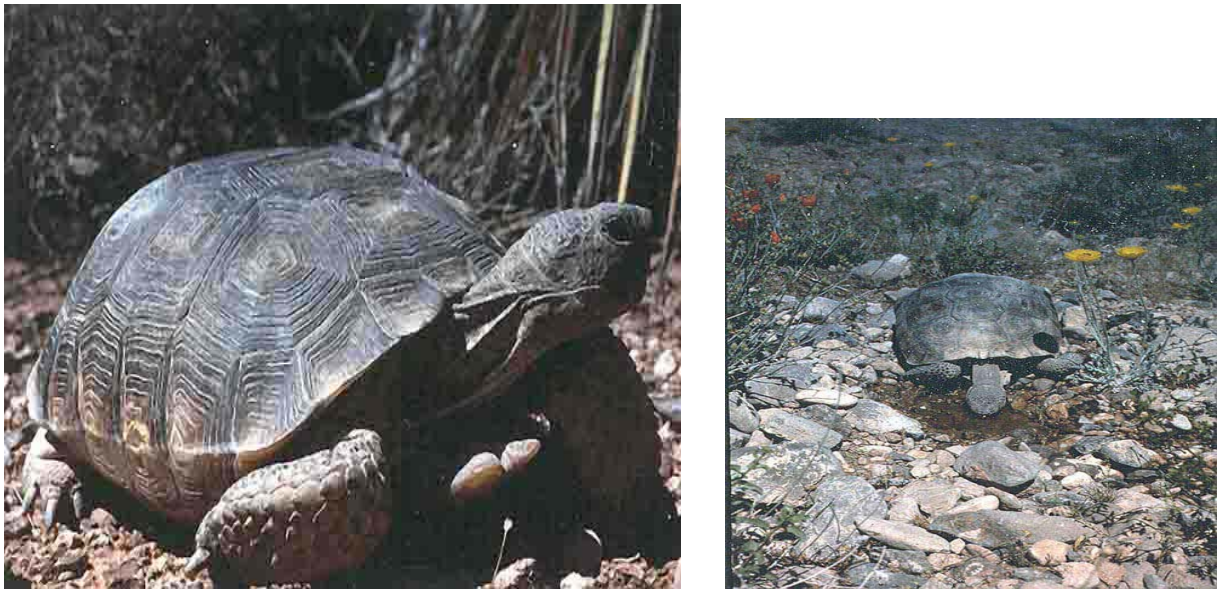

FIGURE 7. DESERT TORTOISE (*GOPHERUS AGASSIZII*)

During the 1970s, it was apparent that desert tortoise populations were declining throughout a significant portion of the range. Many factors have been implicated, including:

- land development
- offroad vehicle travel
- poaching and vandalism (including shooting)
- disease (especially upper respiratory tract disease caused by a form of mycoplasma)
- livestock, wild horse, and wild burro grazing
- habitat degradation due to non-native plant invasion
- range fires fueled by non-native annual grasses and forbs
- energy and mineral development
- road and highway traffic/collisions
- trail construction
- collecting
- predation by the common raven, coyote, feral dogs and cats (associated with human garbage dumps and backyard feedings)
- release of non-native desert tortoises into areas occupied by native populations
- natural droughts (resulting in poor nutrition and immunocompromise) (Oldemyer 1994, USFWS 1990, Jacobson et al. 1995, CDF&G 1990, Berry 1992 in NatureServe 2003)

The U.S. Fish and Wildlife Service listed the Mojave population of the desert tortoise (north and west of the Colorado River) as endangered under emergency listing procedures enacted in August 1989. In 1990, the desert tortoise was listed as threatened under normal listing procedures.

The desert tortoise is predominantly herbivorous and a semifossorial inhabitant of warm upland plateaus and mountain slopes in the Mojave Desert. In the Mojave Desert, the desert tortoise occupies creosote bush scrub and the creosote bush – white bursage community. The native grass, big galleta, is often present where the desert tortoise is most abundant. In general, desert tortoises forage primarily on native winter and summer annual plants (dicots and grasses), perennial grasses, cacti, and perennial shrubs in descending order of preference. Insects, caterpillars, and other insect larvae may also be eaten, and desert tortoises have been observed biting road-killed anurans and lizards (Brown 1968, Okamoto 1995 in NatureServe 2003). It has been suggested that an active adult desert tortoise requires about 45 pounds of herbaceous forage per month (NatureServe 2003).

Optimal diet items include forbs, which are higher in protein, carbohydrate, lipids, calcium, crude fiber, and water. Forbs known in desert tortoise diets include *Eriogonum inflatum, Astragalus nuttallianus, Plantago insularis, Erodium cicutarium, Krameria parvifolia, Amsinckia* sp., *Camissonia* sp., *Descurainea* sp., *Lotus* sp., *Lupinus* sp., *Malacothrix* sp., *Gilia* sp., *Mentzelia nitens*, and *Nama* sp. Annual grasses important in desert tortoise diets are largely exotics and include *Bromus rubens, Schizmus barbatus, Festuca octoflora*, and the native *Bouteloua barbata*. Perennial grasses provide food, but also provide shelter, soil retention, and a longer growing season; these species include *Hilaria (Plueraphis) rigida, Muhlenbergia porteri*, and *Oryzopsis hymenoides*. *Sphaeralcea ambigua*, a shrub, is regularly ingested by the desert tortoise, and *Opuntia basilaris* buds, flowers, and fruits are also seasonally ingested (Berry 1978 in NatureServe 2003).

Desert tortoises may sometimes ingest high-calcium materials such as limestone pebbles, caliche from layers along embankments, soil, and bones. The ingestion of calcium is most frequently observed in adult females and possibly in growing juveniles (Esque and Peters 1994, Marlow and Tollestrup 1982 in NatureServe 2003).

Desert tortoises generally forage on native winter and summer annuals (dicots and grasses), perennial grasses, cacti, and other vegetation including a few perennial shrubs. Galleta grass (*Hilaria rigida*) provides significant forage for adults and, along with Indian ricegrass (*Oryzopsis hymenoides*), is often associated with high tortoise densities. However, neither of these native grasses were found in the project area during the botanical survey (York 2003). Forbs, which have been identified in the diet of desert tortoises and which were observed in the project area during the botanical survey, included *Amsinckia* sp., *Camissonia* sp., *Eriogonum inflatum, Erodium cicutarium, Gilia* sp., *Lotus* sp., *Lupinus* sp., *Mentzelia* sp., and *Nama* sp. *Opuntia basilaris*, buds, flowers, and fruits of which are seasonally ingested, was also found in the project area. Non-native weed grasses important in the diet of desert tortoises, specifically *Schizmus* and *Bromus,* were found in the project area (York 2003).

Adult desert tortoises in the Mojave Desert are typically active from March through September, with a total active period of about four to five months per year. During the spring season in the Mojave Desert, tortoises were observed to be active for about three hours every fourth day, and some tortoises did not feed for several weeks following spring emergence from dens (Behler and King 1979 in NatureServe 2003). Desert tortoises were found to operate within the 25 degrees to 35 degrees Centigrade range of body temperatures.

Desert tortoise habitat is most often associated with well-drained sandy loam soils of plains, alluvial fans, and bajadas, although they may also occur along the edges of basaltic flow and other rock outcrops. In the Mojave Desert the sandy loam soils may be obscured by a veneer of desert pavement and burrows are most often proximate to washes and arroyos under these conditions. The desert tortoise has a tendency to excavate and utilize more than one burrow and juveniles are particularly prone to excavate multiple burrows (mostly under large shrubs) and also use abandoned rodent burrows (Woodbury and Hardy 1948, Luckenbach 1982 in NatureServe 2003). Burrows often extend from 1- to 8-feet in length and have a single opening. For the Mojave Desert, burrows most often open under a creosote bush (59% to 77% of the time) or white bursage shrub (21% of the time).

Winter burrows are more properly called dens and are extensive, up to 30-feet in length. These dens open to southern exposures and, in some portions of the species' range, may be subject to communal use by several individuals. In the northern portion of the range (i.e. at Death Valley), winter dens are typically not communal (USFWS 1994). Dens are typically excavated beneath caliche or sandstone rock shelves along wash banks (figure 8) (Woodbury and Hardy 1948 in NatureServe 2003).

FIGURE 8. DESERT TORTOISE DEN CONSTRUCTED UNDER CALICHE

Mating occurs from August through October and again in April and May. The females may store sperm from the prior fall mating or even from prior years of mating. However, fertility declines as time since mating increases. Desert tortoise eggs are laid mainly from May to early July in shallow depressions, often 3- to 4-inches deep. Clutch sizes are normally 3 to 7 eggs, but up to 15 eggs have been observed in a nest. Most commonly, Mojave Desert tortoises construct egg nests inside the first 2 feet of the burrow floor, in the soil apron surrounding the burrow entrance, or in the shade of a shrub adjacent to the burrow. Newly hatched desert tortoises emerge from the nests in September and 83% of neonatal tortoises excavated new burrows or enlarged pre-existing rodent burrows in their first weeks (Niblick et al. 1994, Turner et al. 1984, Turner et al. 1986, USFWS 1994 in NatureServe 2003).

Habitat Assessment

Twenty-two locations within the park were transect surveyed for desert tortoise in 1996 (Boland and Goodlett 1997). Only 60 of the 248 transects surveyed contained tortoise sign and the majority of these were in the southern portion of the park. Scattered signs of habitation found in the central and northern portions of the park were at approximately the same latitude as the general northern limits of desert tortoise habitat (creosote bush scrub habitat) in the Mojave Desert of California (Berry and Nicholson 1984), and are consistent with the northern range limit for desert tortoises on the Nevada test site east of the park (Rautenstrauch et al. 1994 as cited in Boland and Goodlett 1997). The paucity of sign in these regions of the park supports a density estimate of less than 20 individuals per square mile, and suggests that these do not represent viable populations (Boland and Goodlett 1997). In contrast, the number of live tortoises, dead tortoises, and tortoise sign observed in the southern reaches of the park, particularly Greenwater Valley and the western-most valley of the Owlshead Mountains, support a conservative density estimate of 50 individuals per square mile. The populations in these southern portions of the park may represent the northern-most viable populations of desert tortoises in California.

The 1996 survey did not detect tortoise sign at Mud Canyon; however, the only previous desert tortoise survey conducted at the park (Marlow 1992, as referenced by Boland and Goodlett 1997), did report desert tortoise sign in the Mud Canyon area.

While the 1996 survey was not designed to assess habitat preference within the park, the higher densities of desert tortoise individuals and sign were observed in creosote bush scrub habitats, on sloping bajadas, with sandy-loam to pebbly soils. However, across the features surveyed (typically bajadas, valley floors, rolling hills, and canyons), desert tortoises appeared to occupy a variety of vegetative, topographical, and soil types.

The Desert Tortoise (Mojave population) Recovery Plan (USFWS 1994) recognized six evolutionarily significant units within the Mojave population, and subsequently referred to these evolutionarily significant units as the various recovery units. The desert tortoise populations at Death Valley National Park are within the eastern Mojave recovery unit. The recovery plan (USFWS 1994) also proposed two types of desert tortoise conservation areas. The first of these is a desert wildlife management area—an administrative area within the recovery unit that is managed so that reserve-level protection is afforded desert tortoise populations, while maintaining and protecting other sensitive species and ecosystem functions. Death Valley National Park is not part of or proximal to any designated desert wildlife management area. The second type of designation put forth by the recovery plan (USFWS 1994) is that of critical habitat. Critical habitat for listed species consists of: (1) the specific areas within the geographic area occupied by the species at the time it is listed, in accordance with the provisions of section 4 of the Endangered Species Act, on which are found those physical or biological features (constituent elements) that are essential to the conservation of the species and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by the species at the time it is listed, in accordance with the provisions of section 4 of the Endangered Species Act, upon a determination by the Secretary of the Interior that such areas are essential for the conservation of the species (ESA Section 3 (5)(A)). Death Valley National Park does not contain designated critical habitat, nor is it close to any designated critical habitat for the desert tortoise.

A desert tortoise survey was conducted in 2001 for the realignment of three curves along Mud Canyon / Daylight Pass Road. No tortoise sign was found on the three-project construction sites; however, tortoise had been seen in the general area. The park generated a biological assessment, which stated that the project may affect, but was not likely to adversely affect, desert tortoises. In addition, construction activities for the project were limited to December, January, and the first week in February. The U.S. Fish and Wildlife Service agreed with the park's assessment and did not complete a formal section 7 consultation for that project.

Habitat Survey Results

Desert Tortoise surveys were conducted April 15 – 17, 2003, along Mud Canyon / Daylight Pass Road from Hells Gate (milepost 7.2) to the eastern boundary of the park (milepost 17.1). The project area, for survey purposes, was a corridor 300-feet wide, 150 feet on either side of the existing road centerline. Within this corridor, transects were spaced at 10-meter intervals. Additionally, transects were walked in a zone of influence that extended 2,400 feet from the project area border. Transects in the zone of influence were walked at distances of 100 feet, 300 feet, 600 feet, 1,200 feet, and 2,400 feet from the project area boundary. In areas proposed for realignment, the project area and zone of influence were increased appropriately. All recommendations in U.S. Fish and Wildlife Service protocols for desert tortoise surveys were followed (Woodman 2003).

One adult male desert tortoise, measuring 310-millimeters (mm) mid-carapace length, was found in the zone of influence transect that was 2,400 feet from the boundary of the project work area. The UTM coordinates reported for this tortoise sighting were Easting: 509061, Northing: 4073847 (Woodman 2003; UTM zone not reported, but assumed to be 11S). The desert tortoise was apparently in good health. No other desert tortoises or sign (e.g., burrows

or scat) was observed in either the project area or the zone of influence transects during this survey (Woodman 2003). A copy of the survey is contained in appendix D.

Although not a part of the official survey, three separate sightings of desert tortoises (an apparently different individual each time) crossing highway 374 in the vicinity of Daylight Pass were reported in the period between August 26 and September 24, 2003 (Manning 2003 pers. comm.).

CONSERVATION MEASURES

The National Park Service project manager would ensure that the project is completed in accordance with the parameters established in the compliance documents and that conservation measures are properly implemented. The conservation measures discussed in this section are those related to minimizing impacts on desert tortoise populations. Effects to the desert tortoise from the proposed action have been evaluated assuming the implementation of these conservation measures.

Water and Air Quality

Erosion control measures would be implemented to minimize minor and short-term impacts to water quality. Sediment traps, erosion check structures, and/or filters would be considered.

Fugitive dust plumes would be reduced to the extent possible using water to sprinkle on soil during earth-disturbing activities. Water used during road construction would be either pumped from Furnace Creek, or purchased in Beatty and hauled by truck. No heavy vehicles (e.g., water trucks) would be allowed on the Beatty Cutoff. Airborne particulates would be increased in the area of construction during the work effort.

Revegetation

For much of the corridor, revegetation work would be minimized because construction would be completed in previously disturbed areas of the roadway template. No imported topsoil or hay bales would be used during the project, in an effort to avoid introduction of non-native plant species or inappropriate genetic stock of native plant species. Roadside berms and abandoned parking/turnout areas would be allowed to return to their natural condition over time.

Desert Tortoise

In its 2001 biological opinion for the general management plan for Death Valley National Park, the U.S. Fish and Wildlife Service listed five types of activities associated with impacts to desert tortoises, including:

1. vehicle use

2. disturbance of habitat
3. attraction of predators
4. disturbance, injury, or mortality induced by pets
5. disturbance, injury, or mortality induced by handling (USFWS 2001)

The rehabilitate Mud Canyon / Daylight Pass Road project would occur in the Mojave Desert scrub habitat (Creosote Bush – Burrobush – Blackbrush Sparse Shrubland) for the desert tortoise. Construction along this existing roadway would primarily affect previously disturbed, rarely used habitat (Woodman 2003). Any desert tortoise populations that may have historically occurred along the roadway has already received impacts, evidenced by the paucity of signs of current habitation.

However, there are incidental reports by park personnel and visitors of desert tortoises crossing this stretch of road between the general vicinity of Daylight Pass and the park boundary near Beatty, Nevada (Woodman 2003). Park personnel have reported three separate incidents of desert tortoises (an apparently different individual each time) crossing highway 374 in the vicinity of Daylight Pass in the period between August 26 and September 24, 2003 (Manning 2003 pers. comm.). A perimeter survey, conducted April 15–17, 2003, found one live tortoise in the zone of influence at a distance of 2,400 feet from the project area (Woodman 2003). No other tortoise sign (e.g., burrows or scat) was observed during the survey, either in the project area or the zone of influence.

Mitigation measures that would be implemented to further minimize adverse effects to the desert tortoise, including habitat loss, degradation, and fragmentation; direct mortality from construction activity; common raven (*Corvus corax*) predation; and continued vehicle use on the project road are presented as follows:

- An individual would be designated the project monitor to oversee project compliance and coordination. The project monitor would coordinate with the U.S. Fish and Wildlife Service and be authorized to halt any activity that may endanger desert tortoises.

- The project monitor would be present during all monitoring/survey efforts, road improvements, and parking/turnout area construction.

- Only the authorized biologists, approved by the U.S. Fish and Wildlife Service, would be allowed to handle/relocate desert tortoises.

- Clearance surveys would be conducted one week prior to commencement of any construction/rehabilitation activities. All potential desert tortoise burrows within 100 feet of the designated routes, parking/turnout sites (existing or proposed), or staging areas would be examined and flagged. Clearance surveys would be conducted by either the project monitor or the authorized biologist, depending on the likelihood of an occurrence of desert tortoises for that area (i.e., the time of year, weather conditions, and suitability of the survey area as habitat for desert tortoises).

- Only qualified and/or authorized biologists, as appropriate, would be utilized for oversight of all activities within the roadway corridor. The National Park Service

would submit the names and qualifications of proposed project monitors and authorized biologists to the U.S. Fish and Wildlife Service for review and approval at least 15 days prior to initiation of surface disturbing events. No project-related activity would commence unless these individuals have been selected and approved.

- At the completion of the road reconstruction, all materials used to mark or identify the tortoise burrows would be promptly removed.

- Any desert tortoise relocated or otherwise removed from areas undergoing road reconstruction would be handled in accordance with the procedures described in *Guidelines for Handling Desert Tortoises During Construction Projects* (DTC 1994, revised 1996). Handling will occur only by an authorized biologist. All desert tortoise would be translocated the minimum distance practicable, within appropriate habitat, to facilitate the animal's safety and survival.

- Any project-related vehicle or equipment operating on unpaved roads would not exceed a speed limit of 25 miles per hour.

- Cross-country travel would not be authorized, except under life-threatening or emergency situations.

- The project monitor would conspicuously stake, flag, or mark work area boundaries (including the new access roads, realignments, and parking/turnout areas) to minimize surface disturbance to the surrounding habitat. Material stockpiling, machinery storage, and vehicle parking would only be permitted in designated areas.

- The contractor must use tortoise-proof fencing to protect against intrusion by the desert tortoise at sites with potential hazards (e.g., auger holes drilled for erecting new signage). The fence would consist of a non-breachable barrier and support structures. Galvanized hardware cloth of 0.5-inch diameter, and at least 18-inches high would be firmly secured along the base of the fence in direct contact with the ground. Fence placement and construction would be supervised and approved by the project monitor. All tortoise fencing would be dismantled and transported from the site following project completion.

- Temporary fencing established around desert tortoise hazard areas would be inspected at least weekly, and corrective action taken to maintain the integrity of the desert tortoise barrier.

- A desert tortoise education program would be presented by the project monitor to all construction personnel prior to any construction activities. Following the onset of construction activities, any new employees would be required to formally complete the desert tortoise education program prior to working onsite. As a minimum, the desert tortoise education program would cover the following topics: (1) desert tortoise distribution/occurrence; (2) general behavior and ecology; (3) sensitivity of the species to human activities; (4) legal protection; (5) penalties for violation of state or federal laws; (6) reporting requirements; and (7) project protective mitigation measures.

- The FCR would maintain a complete record of all desert tortoise encounters. The record would include: location, date, time, life history, general condition, identification numbers, and action taken. Within 90 days following the completion of this project, a report of all project monitor activities and actions would be submitted to the U.S. Fish and Wildlife Service.

- No pets or firearms would be permitted inside project construction boundaries, or other associated work areas, at any time.

- Upon completion of this project, all materials and vehicles/equipment would be removed from the project area.

- A litter control program would be implemented during construction to eliminate the accumulation of trash, to avoid attracting common ravens that may prey on juvenile desert tortoise. All trash and food items would be promptly contained in raven- and coyote-proof containers provided by the contractor, and removed from the park on a daily basis. Construction refuse would be transported off park lands on a weekly basis.

- Death Valley National Park would evaluate the feasibility of posting of educational information at the new park boundary turnout, the refurbished Daylight Pass turnout, and the Hells Gate rest stop, advising visitors of the biology and protected status of the desert tortoise, desired human behavior relative to desert tortoises, the consequences for taking a threatened species, and the need to check under their vehicles before moving them to avoid running over tortoises seeking shade.

- Park visitors would be reminded that National Park Service regulations require dogs to be on a leash, minimizing their ability to disturb, injure, or kill desert tortoises.

- Park visitors would be advised to pack out their trash to avoid attracting tortoise predators such as common ravens to the area.

EFFECTS OF THE ACTION

This section provides an analysis of the effects to desert tortoise populations as a result of the rehabilitate Mud Canyon / Daylight Pass Road project. The impacts to desert tortoises were evaluated for adverse or beneficial effects, short- and long-term effects, direct and indirect effects, impact intensity, context, and cumulative effects.

During the rehabilitate Mud Canyon / Daylight Pass Road project, some short-term adverse effects would be anticipated from increased levels of human activity, noise, and the ground vibrations produced by vehicles and heavy equipment. Long-term, adverse impacts may result from this project due to continued road use, as such use would continue to affect the desert tortoise populations to either side of the roadway. Long-term, adverse impacts may be a result in the area of the Mixing Table through continued use as a staging area for various projects in this part of the park. Beneficial impacts may occur over both the short and long term as a result of various erosion control measures.

Table 1 provides a summary of effects related to specified activities within the rehabilitate Mud Canyon / Daylight Pass Road project. The reader is encouraged to review the construction plans (attachment A) to fully comprehend this summary table.

CUMULATIVE EFFECTS

This section considers cumulative effects as defined by both the National Environmental Policy Act and the Endangered Species Act. Past, present, and reasonably foreseeable future activities, whether privately-funded or funded by some level of government (i.e., local, state, federal), and which have the potential to impact desert tortoises or their habitat in the vicinity of the project are considered. In addition, past, present, and future projects in or near the park are considered for their cumulative effect on desert tortoises or their habitat on a regional basis.

Activities Proximal to Project Area

Rehabilitation of the Bonnie Claire / Ubehebe Crater Road is the only action known to be reasonably certain to occur within the vicinity of the rehabilitate Mud Canyon / Daylight Pass Road project. This road work is planned for 2007, 2008, or later, depending on the availability of funding. Activities and impacts described for the current (rehabilitate Mud Canyon / Daylight Pass Road) project would be similar for the Bonnie Claire / Ubehebe Crater Road rehabilitation, although impacts may be even less intense because a substantial portion of that road is below elevations in which desert tortoises are more likely to occur. Hence, the cumulative impacts of these two projects on desert tortoises or their habitat in the vicinity of the rehabilitate Mud Canyon / Daylight Pass Road project would be anticipated to reflect those outlined for the current project.

TABLE 1. ACTIVITY TABLE DEPICTING THE SUMMARY OF POTENTIAL EFFECTS

Activity	Description	Short-Term Impacts	Long-Term Impacts
Bonnie Claire Road / Mud Canyon Intersection	▪ increase turning radius ▪ add rumble strips	All work within current footprint. The site is below elevations at which desert tortoises are found in this area. Short-term adverse effects possible due to movement of machinery along entire road to reach this site.	All work within current footprint. The site is below elevations at which desert tortoises are found in this area. Long-term impact due to continued road use.
Previous Realignment of Three Curves	▪ develop tie-ins with 3 curves ▪ stripe lanes ▪ replace/adjust curve delineators	These sites are below elevations at which desert tortoises are typically found in this area; all activities occur within current road footprint. Short-term adverse impacts possible due to movement of machinery along entire road to reach this site.	These sites are below elevations at which desert tortoises are typically found in this area; all activities occur within current road footprint. Long-term impact due to continued road use.
Hells Gate	▪ improve rest stop ▪ enhance delineation of intersection ▪ increase signage ▪ add buried concrete drainage barrier	These improvements would occur within the current footprint of the rest stop. Short-term adverse possible is due to movement of machinery along major portion of road to reach this site. Beneficial impacts may result from erosion control.	All activities within current footprint. Long-term impact due to continued road use. Beneficial impacts due to long-term erosion control.
Mixing Table (Contractor Staging Area)	▪ continued use of 200m x 20-m area for staging ▪ rehabilitation of remaining area	Potential for adverse impacts during use of staging area and recontouring of remaining area.	Adverse impacts possible through continued use of site for staging of construction activities.
Gabion Erosion Control Fencing	▪ Removal of the gabion fencing would be completed between approximately Sta. 12+920 to Sta. 13+060	No impacts	No impacts
Daylight Pass	▪ road realignment ▪ parking area remodeling ▪ install culvert for drainage and for tortoise crossing	All activities would occur within current footprint, as this area is in the prime elevation zone for desert tortoises/habitat. Potential short-term impacts due to use of heavy equipment.	All activities within current footprint. Long-term impact due to continued road use. Beneficial impacts may result from erosion control and protected passage under road for tortoises.
Park Boundary	▪ replace cattle guard ▪ develop new parking area	Would result in disturbance of 0.53 acre of habitat near where tortoises have been reported. Potential short-term impacts due to use of heavy equipment.	Long-term, adverse impacts due to continued road use and disturbance of 0.53 acre of habitat.
Roadway Realignments	▪ horizontal and vertical alignment shifts	All realignments would occur within current footprint. Potential short-term, adverse impacts due to use of heavy equipment.	All realignments would occur within current footprint. Long-term impact due to continued road use.
Paved Ditches	▪ modification or replacement of existing paved ditches ▪ Installation of a new paved ditch	All impacts within current road footprint. Potential short-term impacts due to use of heavy equipment.	All impacts within current road footprint. Long-term impact due to continued road use.
Miscellaneous	▪ removal of water tank turnout ▪ regrading of the roadside berms would be completed between approximately Sta. 12+920 to Sta. 13+060.	All impacts within current road footprint. Potential short-term impacts due to use of heavy equipment.	Long-term impact due to continued road use.

Projects In or Near the Park, but Distant from Project Area

Past Actions. The following past actions could contribute to cumulative effects on a regional basis:

- Rehabilitation of Badwater Road – The road rehabilitation work was completed in 2003. It included resurfacing the road, reconstruction of shoulders, and replacement of culverts.

- Nevada Department of Transportation State Route 374 Improvements – This project was completed in early 2003, and included regrading and chip sealing the existing road from the Death Valley National Park boundary to Beatty.

Current and Future Actions. Current and projected future actions that could contribute to cumulative effects on a regional basis include:

- Waterline Replacement at Cow Creek Area – Plans have recently been completed to replace the waterline from Nevares Springs to the Cow Creek area due to pipe breaks.

- Badwater Visitor Use Area Improvements – The construction and associated activities have been recently completed and included improving visitor access to the Badwater pools; improving accessibility for the disabled; improving parking; improving vehicle and pedestrian circulation; and improving interpretive exhibits at the site.

- Furnace Creek Water System Update – This project would change withdrawal scenarios and pumping/piping systems based on current and expected future needs, as well as revised water quality standards for arsenic and the location of rare and endemic species. No timeframe for completing this work has been established; however, it would need to be completed prior to the implementation of the revised arsenic standard in 2006.

- Phase II of DEVA 500 – Phase II of DEVA 500 is a continuation of improvements to park facilities at the park headquarters near Cow Creek. Improvements include new buildings (e.g., new maintenance facility), new adobe where existing adobe has eroded away, and a new gas station, among others.

- Nevada Department of Transportation State Route 373 Improvements – 64 culvert extensions are planned along this route from the Nevada/California state line to the junction with U.S. 95 (approximately 16 miles).

- Nevada Department of Transportation State Route 267 Improvements – A 2-inch overlay is planned for approximately 12 miles along this route from the Nye County / Esmerelda County line to the junction with U.S. 95.

These projects are all in or near the central to northern regions of the park where desert tortoise densities are estimated at less than 20 individuals per square mile (Boland and Goodlett 1997).

AMOUNT AND EXTENT OF TAKE ANTICIPATED

The rehabilitate Mud Canyon / Daylight Pass Road project would generate new disturbance of approximately 0.22 acre along the entire stretch of the road. This disturbance would include any work (paving, shoulder support, cut/fill slopes, ditches) that extends beyond the existing edge of road and the roadside berms. The new parking turnout at the park boundary would disturb an additional 0.40 acre. The old boundary turnout would be allowed to return to its natural condition and approximately 1.0 acre of the Mixing Table area would be recontoured and allowed to return to a natural condition; however, these areas would not be actively revegetated. The total amount of habitat that would be disturbed through actions of this project is 0.62 acre.

Four tortoises have been sighted in the vicinity of the project area in the last year. Tortoises on the surface within the construction limits could be killed or injured by construction vehicles unless they are moved during clearance surveys. As no burrows have been found within the 2,400-foot zone of influence, it is unlikely that burrows or tortoises in their burrows would be impacted by the project. Conservation measures proposed to reduce the potential adverse effects associated with project activities include: (1) pre-construction clearance surveys, (2) survey/removal activities during construction in months when desert tortoises are active, (3) conducting an education program for all project employees, and (4) establishment of a litter control program during construction. Nonetheless, it is possible that during rain events, when desert tortoise movements typically increase, individuals may move onto the project site. Stringent handling procedures would be implemented in removing these animals from the project area. Only the authorized biologists, approved by the U.S. Fish and Wildlife Service, would be allowed to handle/relocate desert tortoises. Given the small number of individuals anticipated to be in the project area, this harassment rate is not expected to exceed two animals over the course of the project. After the project is completed, there would be a continued threat to desert tortoises from vehicular take. Based on local population estimates and casual observations along this stretch of road, it is estimated that four individuals may have to be moved per year for the duration of the use of the road.

DETERMINATION OF EFFECT

The proposed project, rehabilitate Mud Canyon / Daylight Pass Road, would occur in the northern limits of the desert tortoise range. Desert tortoise densities in this area are estimated at less than 20 individuals per square mile. Impacts to individuals and habitat in the project area would be minimized through proposed mitigation measures; however, there is still the potential for some adverse impact, at the individual or habitat level, to occur. Therefore, the determination of effect on the desert tortoise for implementation of the rehabilitate Mud Canyon / Daylight Pass Road project is "*may affect, likely to adversely affect.*"

SUMMARY AND CONCLUSION

During the rehabilitate Mud Canyon / Daylight Pass Road project, some short-term adverse effects would be anticipated from increased levels of human activity, noise, and the ground vibrations produced by vehicles and heavy equipment. Long-term, adverse impacts may result from this project due to continued road use, as such use would continue to affect the desert tortoise populations to either side of the roadway. Such impacts are considered negligible as this road has been in use for a long time, the impacts would be present regardless of the road improvement, and desert tortoise density along the road is low. Long-term, adverse impacts may be a result in the area of the Mixing Table through continued use as a staging area for various projects within this part of the park. Beneficial impacts may occur over both the short and long term as a result of various erosion control measures.

Although it is believed, and generally supported by the available data, that the areas immediately adjacent to Mud Canyon / Daylight Pass Road do not present suitable habitat for desert tortoises due to past, present, and ongoing disturbances, desert tortoises do appear to exist in areas distant from and to either side of the roadway. The April 2003 presence/absence survey detected a single adult male desert tortoise in the 2,400-foot transect of the zone of influence. No other tortoises or tortoise sign (e.g., burrows or scat) were found during this survey. Three additional tortoises were reported crossing the roadway in the area between the park boundary and Daylight Pass during August and September of 2003. As such, it is in this area that the potential for impacts to individual desert tortoises or their habitat is considered highest. Therefore, the determination of effect on the desert tortoise for implementation of the rehabilitate Mud Canyon / Daylight Pass Road project is "*may affect, likely to adversely affect.*"

LITERATURE CITED

Behler, J.L., and F.W. King
1979 The Audubon Society field guide to North American reptiles and amphibians. Alfred A. Knopf, New York. 719 pp.

Berry, K.H.
1978 Livestock grazing and the Desert Tortoise. Pp. 505-19 in Transactions of the 43rd North American Wildlife and Natural Resources Conference; Phoenix, AZ; 1978 March 18-22. Wildlife Management Institute, Washington, DC.

Berry, K.H.
1992 Population declines, epidemics, visitor use, and habitat deterioration at two desert tortoise preserves in California: lessons for future preserves. Abstract, 6th Annual Meeting of the Society for Conservation Biology, p. 39.

Boland, S. and G. Goodlett
1997 Desert tortoise survey conducted in Death Valley National Park. Report delivered to Death Valley National Park. 25 pp + Appendices.

Brown, P. R.
1968 Residents of the Golden State. International Turtle and Tortoise Society Journal. 2(6):28-9.

California Department of Fish and Game (CDF&G)
1990 1989 annual report on the status of California's state-listed threatened and endangered plants and animals. 188 pp.

Esque, T.C. and E.L. Peters
1994 Ingestion of bones, stones, and soil by desert tortoises. Pp. 105-11 in Bury, R.B. and D.J. Germano (eds.). Biology of North American Tortoises. National Biological Survey, Fish and Wildlife Research 13.

Jacobson, E.R. et al.
1995 Mycoplasmosis and the desert tortoise (*GOPERUS AGASSIZII*) in Las Vegas Valley, Nevada. Chelonian Conservation and Biology 1(4):279-284.

Lamb, T., J. Avise, and J. Gibbons
1989 Phylogeographic patterns in mitochondrial DNA of the desert tortoise (Xerobates agassizi), and evolutionary relationships among the North American gopher tortoises. Evol. 43:76-87.

Lamb, T. and C. Lydeard
1994 A molecular phylogeny of the gopher tortoises with comments on familial relationship within the Testudinoidea. Mol. Phylo. Evol. 3:283-91.

Luckenbach, R.A.
1982 Ecology and management of the desert tortoise (*GOPHERUS AGASSIZII*) in California. pp. 1-37 in Bury. R.B. (ed.).

1982 North American Tortoise Conservation and Ecology. Wildlife Res. Rep. 12. U.S. Fish and Wildlife Service, Washington, DC.

Manning, L. (Death Valley National Park)
2003 Email notifications of tortoise sightings along Daylight Pass / Mud Canyon Road. Emails dated 8/26/03, 9/20/03, and 9/24/03.

Marlow, R.W. and K. Tollestrup
1982 Mining and exploitation of natural mineral deposits by the desert tortoise. *GOPHERUS AGASSIZII.* Animal Behavior. 30(2):475-8.

National Park Service (NPS)
2001 Death Valley National Park General Management Plan. U.S. Department of the Interior, National Park Service. 82 pp + Appendices.

NatureServe
2003 NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.8 NatureServe, Arlington, VA. Available at http://www.natureserve.org/explorer. (Accessed August 25, 2003).

Niblick, H.A. et al.
1994 Role of male-male interactions and female choice in the mating system of the desert tortoise, *GOPHERUS AGASSIZII.* Herpetological Monographs 8:124-32.

Okamoto, C.L.
1995 Color, calcium, and insect choice trials performed with captive juvenile desert tortoises (*GOPHERUS AGASSIZII*). California State University, Dominguez Hills, Carson, CA. M.A. Thesis.

Oldemeyer, J. L.
1994 Livestock grazing and the desert tortoise in the Mojave Desert. Pp. 95-103 in Bury, R.B. and D.J. Germano (eds.). Biology of North American tortoises. National Biological Survey, Fish and Wildlife Research 13.

Turner, F.B., P. Hayden, B.L. Burge, and J.B. Roberson
1986 Egg production by the desert tortoise (*GOPHERUS AGASSIZII*) in California. Herpetologica 42:93-104.

Turner, F.B., P.A. Medica, and C.L. Lyons
1984 Reproduction and survival of the desert tortoise (*SCAPTOCHELYS AGASSIZII*) in Ivanpah Valley, California. Copeia 1984:811-820.

U.S. Fish and Wildlife Service (USFWS)

1990 Endangered and threatened species recovery program: report to Congress. 406 pp.

1994 The desert tortoise (Mojave population) recovery plan. U.S. Fish and Wildlife Service, Region 1-Lead Region, Portland, Oregon. 73 pp. + appendices.

2001 Biological Opinion for the General Management Plan for Death Valley National Park (1-8-00-F-32), dated 24 July 2001. 61 pp.

2003 Response to species list request. Personal communication with Doug Threloff, Ventura Field Office, Nov. 24, 2003.

Woodbury, A.M. and R. Hardy

1948 Studies of the desert tortoise, *GOPHERUS AGASSIZII*. Ecological Monographs. 18(2):145-200.

Woodman, P.

2003 Desert tortoise survey for a proposed highway refurbishment in Death Valley National Park, California. Kiva Biological Consulting. 9 pp.

York, D. (Botanist, Death Valley National Park)

2003 Botanical Survey Report for Daylight Pass / Mud Canyon Roads, 23 September 2003. 12 pp.

APPENDIX A

SPECIES LIST REQUEST LETTER

Appendix A

OCT 1 4 2003

N1621
DEVA 7290

Field Supervisor
US Fish and Wildlife Service
Office of Endangered Species
2493 Portola Road, Suite B
Ventura, CA 93003

Dear Field Supervisor:

Reference: Death Valley National Park, Package 7290, Rehabilitate Daylight Pass/Mud Canyon Road

Subject: Current List of Federally Listed Threatened and Endangered Species

The National Park Service (NPS) is initiating planning to rehabilitate the Daylight Pass/Mud Canyon Road at Death Valley National Park, Inyo County, California. The purpose of this project is to rehabilitate, restore, and resurface (3R) approximately 17.2 miles of Daylight Pass/Mud Canyon Road from the southwest terminus at the intersection with Bonnie Claire Road (milepost 0.0) and proceeding northeasterly to the boundary of Death Valley National Park (see enclosed map).

I am requesting a current list of federally listed threatened or endangered species, species of concern, or any other special status species that might occur in the locality mentioned above, and designated critical habitats, if any, for these species.

In order to meet project schedules, I would appreciate your response to me at the address above by November 14, 2003. If you have any questions or comments I can be reached by phone at 303/969-2054.

We appreciate your continuing assistance with National Park Service projects.

Sincerely,

SIGNED

Compliance Specialist
Denver Service Center

Enclosures

cc: Death Valley NP, Superintendent

bcc:
DSC-LA, Romorno Coney
DSC-NRS, Paul Wharry
DSC-PIF
DEVA - Chief of Resource Management, Linda Greene

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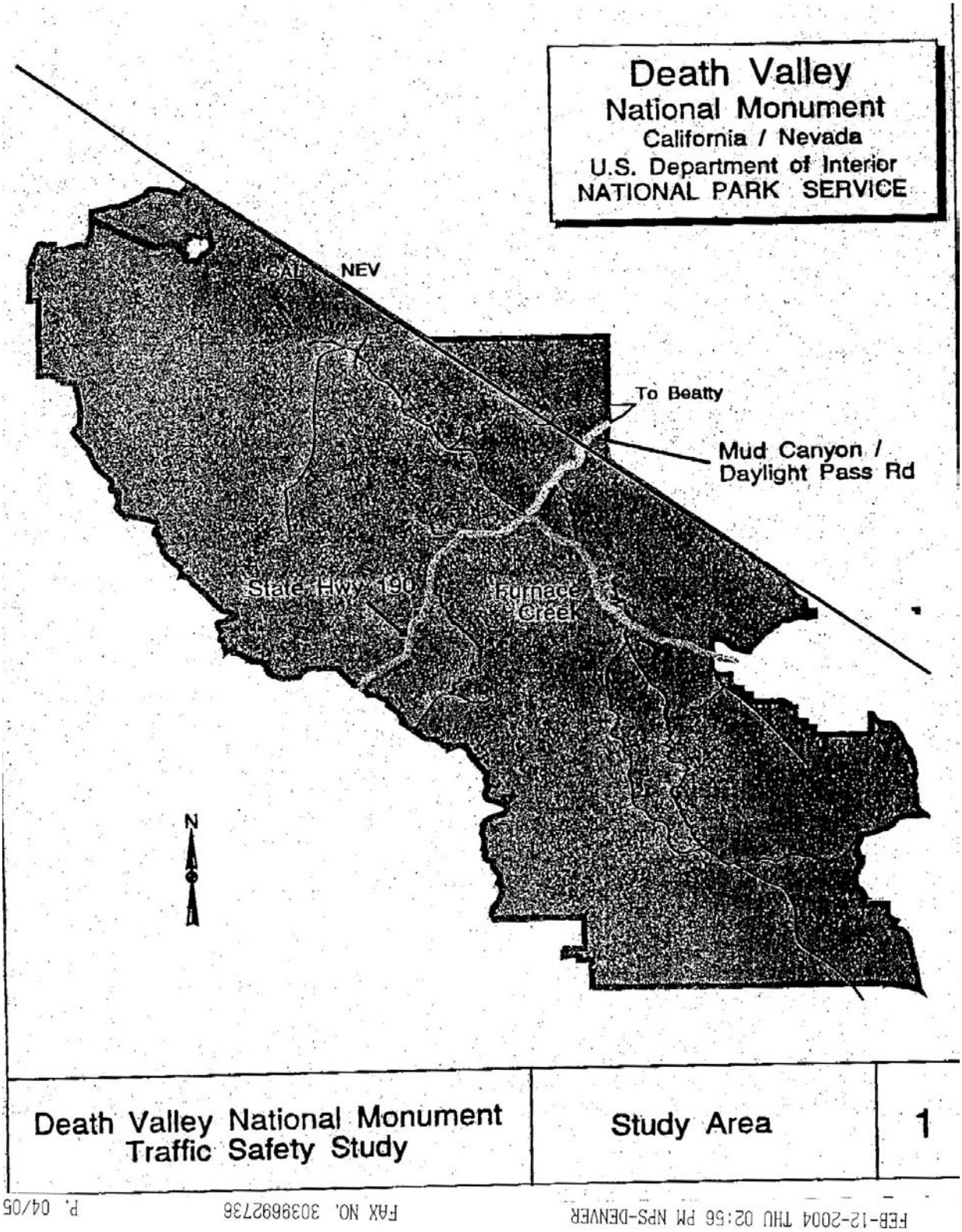
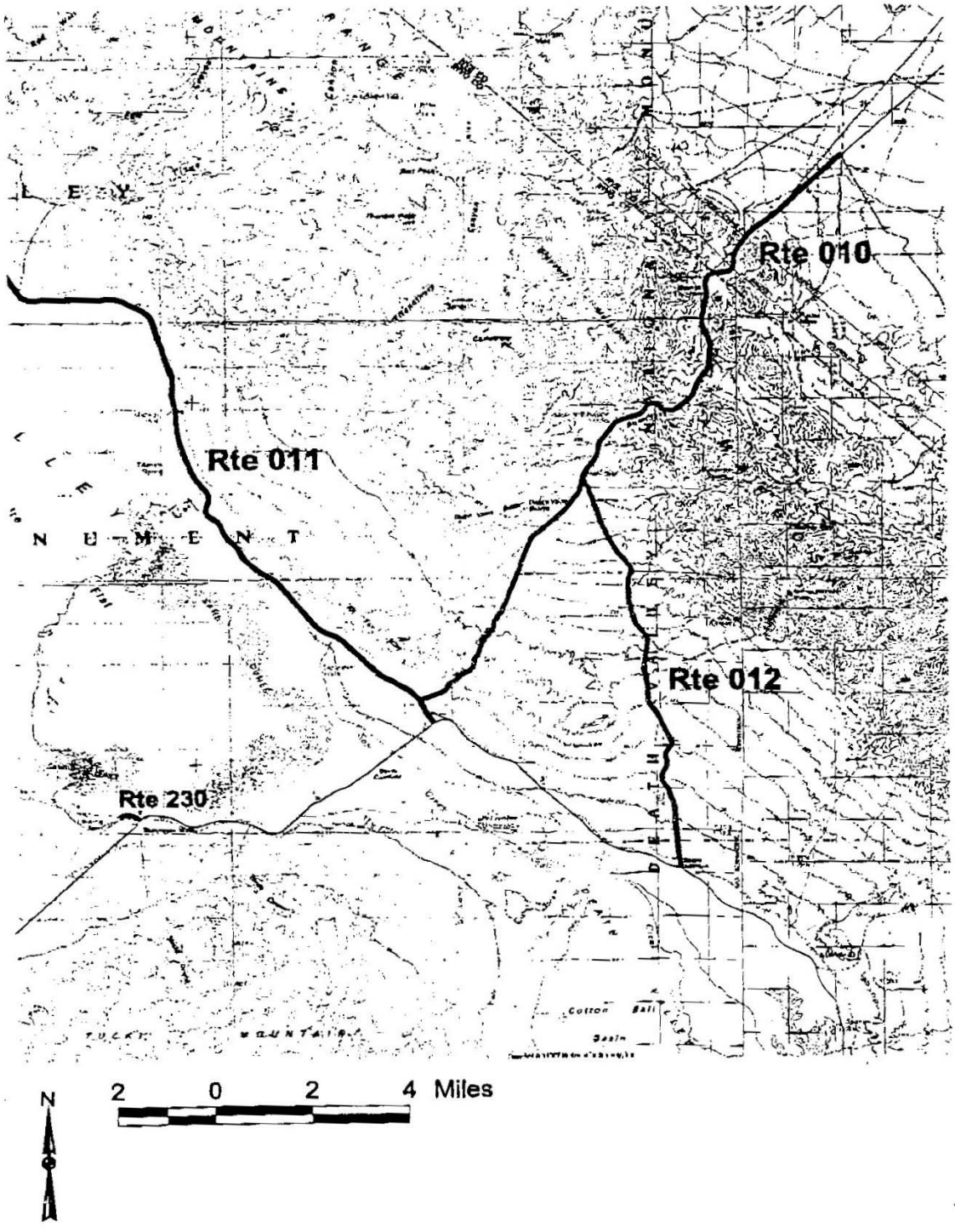


Appendix A

DEATH VALLEY NATIONAL PARK
ROUTE LOCATION
AREA MAP 2



APPENDIX B

CONSTRUCTION PLAN DRAWINGS

Appendix B

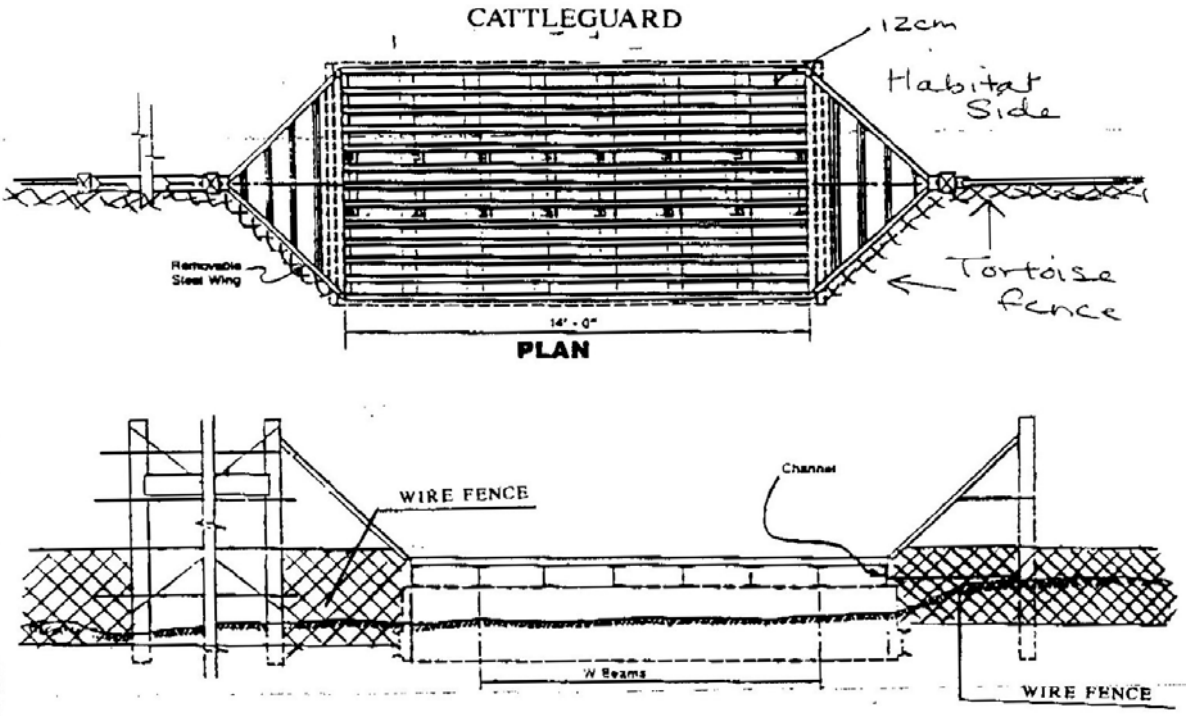
The construction drawings are too voluminous to reproduce here and are available upon request.

Appendix B

APPENDIX C

CATTLE GUARD SPECIFICATIONS

Appendix C



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

TORTOISE PROOF FENCE;
ATTACHMENT TO CATTLEGUARD

DESIGNED
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SCALE
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ALWAYS THINK SAFETY

Appendix C

APPENDIX D

DESERT TORTOISE SURVEY RESULTS

Appendix D

DESERT TORTOISE SURVEY
FOR A PROPOSED HIGHWAY REFURBISHMENT
IN DEATH VALLEY NATIONAL PARK, CALIFORNIA

Prepared for:

Death Valley National Park
Resources Management Division
Death Valley, CA 92328

Prepared By:

Kiva Biological Consulting
P.O. Box 1210
Inyokern, CA 93527

June 22, 2003

Peter Woodman 

The findings of this report are valid through June 22, 2004.

INTRODUCTION

This report provides the results of a desert tortoise survey conducted along approximately nine miles of road in Death Valley National Park (DVNP), Inyo County, California and Nye County, Nevada (Figure 1). The National Park Service has proposed to realign a few sharp curves and resurface Highway 374. This assessment was undertaken to determine the impacts of the proposed project to the desert tortoise and their habitat.

Studies have shown that tortoise habitat is shrinking in California and Nevada and tortoise densities are declining. On August 4, 1989 in response to the declines in tortoise densities, the U.S. Fish and Wildlife Service (USFWS) determined the desert tortoise to be endangered under an emergency rule (as authorized under the Endangered Species Act of 1979, as amended). USFWS published a proposed rule in the Federal Register on October 13, 1989 that would provide long-term endangered status. On April 2, 1990 the desert tortoise was permanently listed as a Federally Threatened species. On June 22, 1989 the California Fish and Game Commission voted to list the desert tortoise as threatened under the California Endangered Species Act of 1970. The tortoise is also listed as a U. S. Bureau of Land Management (BLM) sensitive species. The USFWS and California Department of Fish and Game (CDFG) requires that a survey be conducted to determine the presence or absence of desert tortoises prior to habitat alteration.

PROJECT DESCRIPTION

The National Park Service has proposed to realign a few sharp curves and resurface Highway 5 from the intersection with the road to Scotty's Castle in the southwest to the Park Boundary in the northeast, a distance of 17.1 miles (Figure 1). The construction footprint will vary depending on the type of realignment. Five areas are proposed for potential realignment (Appendix 1). The five proposed realignments are at Mile Posts 6.7, 7.2, 11.9 to 12.1, 12.8 to 13.5, and 14.6 to 14.8. A parking area at MP 12.9, within the proposed realignment from MP 12.8 to 13.5, will be greatly reduced so that it is just a pullout. The existing parking lot will be revegetated. The remainder of the parking area will be restored to natural habitat. In addition, an existing gravel pit will be used as a staging area.

METHODS

The species of concern is the desert tortoise, which can be identified either by finding live tortoises and/or diagnostic tortoise sign (i.e. burrows, scat, carcasses, and/or tracks). All recommendations in USFWS protocols for desert tortoise surveys (1992) were followed. Transects, spaced at 10 meter intervals, were walked in the proposed work area. In addition, transects were walked in the adjacent Zone of Influence at distances of 100, 300, 600, 1200, and 2400 feet from and parallel to the project borders.

Peter Woodman, Erich Green, Kiea Wright, Colin Spake, Bill Hasskamp, and Mary Ann Hasskamp conducted the field surveys on April 15, 16, and 17, 2003. The site surveys were conducted to identify desert tortoise on or near the proposed project site. Surveys were conducted from Hell's Gate (MP 7.2) to the boundary of the park (MP 17.1) near Beatty, NV. The project area was a corridor 300 feet wide, 150 feet on either side of the existing road centerline. In those areas proposed for realignment, the project area was increased and so was the area searched.

The habitat from the intersection with Scotty's Castle Road (MP 0) to Hell's Gate (MP 7.2) was determined to not be desert tortoise habitat by the DVNP biologist, Nancy Mitton. No tortoises have been reported from that area by tourists or DVNP employees. Peter Woodman concurs that

the area does not appear to be habitat for the desert tortoise. The area is very rocky, shrubs are sparse, and the elevation is low, from 200 to 1900 feet ASL.

ENVIRONMENTAL SETTING

The site ranged in elevation from 2000 to 4300 feet, thus several plant communities were traversed. Habitat below approximately 3600 feet were in creosote bush scrub and the dominant perennial species were *Larrea tridentata* (creosote) and *Ambrosia dumosa* (burrobush). Above 3600 feet was blackbrush scrub, a much more diverse and dense community. Common perennials in the upper elevations were *Ephedra viridis* (mormon tea), *Hymenoclea salsola* (cheesebush), creosote, and *Coleogyne ramosissima* (blackbrush [Figure 3]).

EXISTING IMPACTS

By the nature of the project, the project area is either part of an existing highway or is adjacent to an existing highway. Approximately 1000 to 2000 vehicles use the road each month (DVNP vehicle data). Except for the five areas proposed for realignment, all work will take place on the existing roadbed or shoulder. Trash is uncommon in the project area.

RESULTS AND DISCUSSION

One live desert tortoise was found near the project area (Figure 4). A 310 mm (MCL) male was found on the Zone of Influence transect 2400 feet from the road at UTM Coordinates: Easting – 509061/Northing - 4073847. The tortoise appeared to be in good health, he had no signs of Upper Respiratory Tract Disease. His carapace had no signs of shell disease but the plastron could not be checked due to lack of permits. No other desert tortoise sign was observed during the survey within the project area or on the Zone of Influence transects. Desert tortoises have been reported by DVNP visitors and park employees from the vicinity of Daylight Pass to the park boundary near Beatty, NV

Both Nicholson (1978) and LaRue (1998) have shown that numbers of tortoise sign decrease as a road is approached. The longer a road has been present and the greater its use, the greater the impact on tortoise populations. Nicholson showed that tortoises can be essentially eliminated from a 1.5 mile wide corridor (0.75 miles on each side) adjacent to a heavily used road.

No other sensitive vertebrate species or their sign were observed on or near the project site.

This appears to be a project that will have little or no adverse impact on desert tortoise. The project site is an existing Highway. If construction activities are confined to the existing roadbed and shoulder impacts will be minimal. Habitat will be removed only at five sites proposed for realignment. All realignments will be within a corridor 150 feet from the existing road centerline.

This report is valid until June 22, 2004.

RECOMMENDATIONS

1. Confine construction activities to existing disturbed areas as much as possible. There are several areas where habitat will be removed but these areas are generally small in size and no tortoise sign was observed within the realignment areas.

2. A preconstruction survey should be conducted prior to any clearing or shrubbing activities. A biological monitor should also be present during any shrubbing or clearing activities.

3. Because of the lack of sign on or near the project site, I do not believe that tortoise-proof fencing is needed along the project area.

4. Common ravens and coyotes are known predators of the desert tortoises. Both species are attracted to areas with litter and discarded food items. Littering is illegal and cannot be tolerated.

5. All construction personnel should be required to attend an environmental training, a part of which shall include information about the desert tortoise. An NPS representative should be tasked to conduct these presentations.

6. If fencing is placed at any location a biological monitor should be present.

7. In order to minimize impacts to the desert tortoise, construction should take place during the winter or summer, when tortoises are inactive.

LITERATURE CITED

California Department of Fish and Game, Natural Heritage Division. 2000. List of Special Animals. Sacramento, California.

Hickman, J. C. (ed.). 1993. The Jepson Manual, Higher Plants of California. University of California Press, Berkeley, California.

LaRue, E. L. 1992. Distribution of desert tortoise sign adjacent to Highway 395, San Bernardino County, California. Pp. 190-204 *in* K. Beamon (ed.) Proc of the Desert Tortoise Council Symp., Wrightwood, California.

Nicholson, L. L. 1978. The effects of roads on desert tortoise populations. Pp 127-129 *in* M. Trotter (ed.) Third annual Symposium of the Desert Tortoise Council, Las Vegas, Nevada.

Appendix D

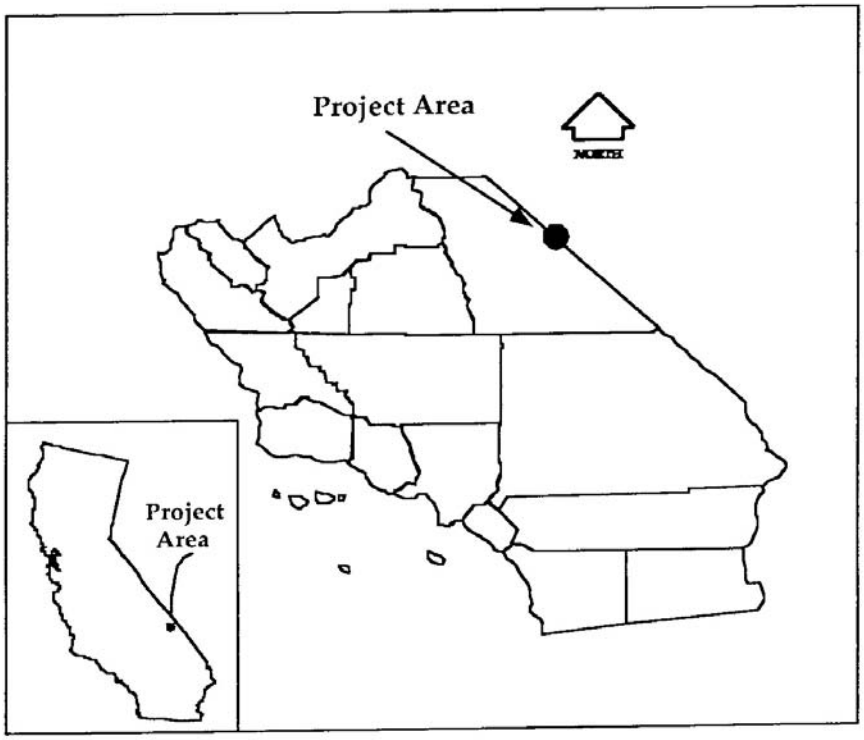

Figure 1. General location for proposed highway resurfacing at Death Valley National Park, Inyo County, California and Nye County, Nevada.

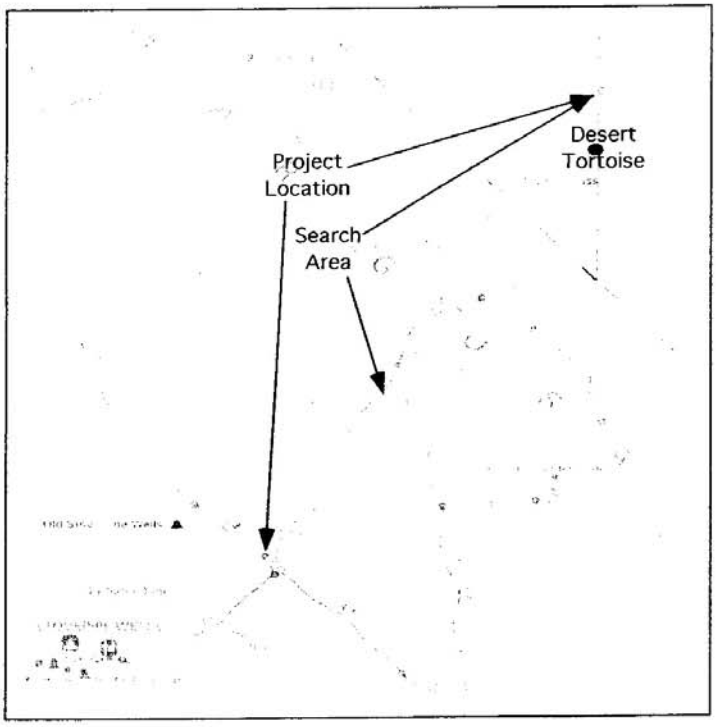

Figure 2. Project location and search area for proposed highway resurfac ing at Death Valley National Park, Inyo County, California and Nye County, Nevada.

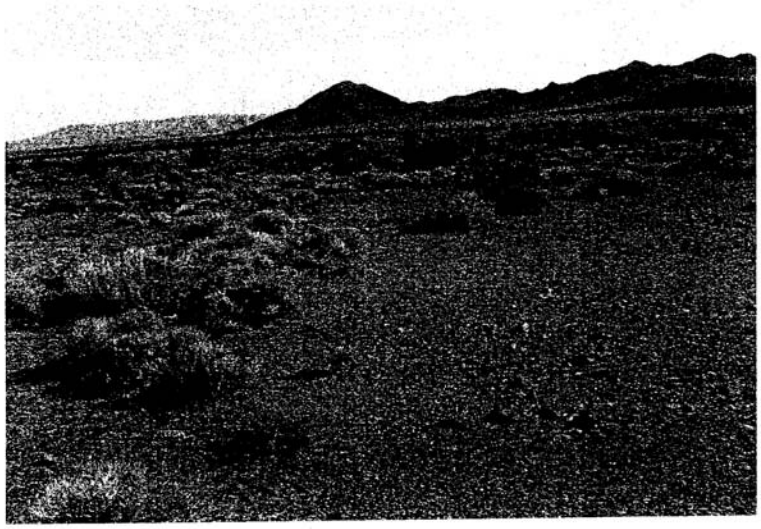

Figure 3. Habitat on east side of Daylight Pass, approximately Mile Post 15.5, Nye County, Nevada. Photo looking to east.

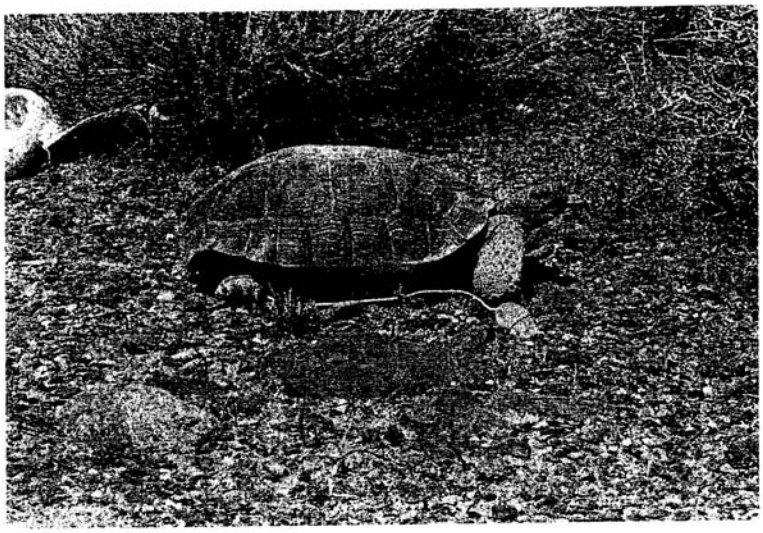

Figure 4. Desert tortoise observed at approximately Mile Post 16.5, Nye County, Nevada. Tortoise was found on Zone of Influence transect 2400 feet south of the project area.

APPENDIX 1

PROPOSED ROAD REALIGNMENT LOCATIONS FOR ROAD CONSTRUCTION PROJECT IN DEATH VALLEY NATIONAL PARK

GENERAL DELINEATION OF PROJECT

There is seventeen and one-tenth (17.1) miles where the survey is to be conducted. The approximate area of the survey with the adjustments is 666.29 acres or 269.65 hectares.

The general width of the survey is 150 feet from the center highway line extending outward of both sides of the highway except where designated.

At the "Y" intersection (Mile 6.7 from Route 5) with the Beatty Cutoff Road at the Hell's Gate parking area, the survey area increases. The survey is 500 linear feet on each of three intersection legs, by 150 feet from each side of the existing pavement, and 150 feet beyond the edge of Hell's Gate parking area. The existing road to the left side (downhill) of the parking area will be widened approximately 30 feet, so the 500 feet section should be survey 180 feet from the existing pavement. Behind the rest facility, toward the drainage, survey 75 feet. The area of this location is 10.53 acres or 4.26 hectares.

At Mile 7.2 on right side of road (southeast side) is a service road leading to an abandoned borrow pit. One hundred and fifty (150) feet from the center of the service road and borrow pit is to be surveyed. The service road is one half (0.5) mile long. The borrow pit will be a staging area for road construction equipment and supplies. The first turnaround loop on the left side is the staging area for the equipment. The remainder of the borrow pit will not be used. The area of this location is 21.82 acres or 8.83 hectares.

At Mile 11.9 to 12.1 on both sides survey 150 feet from the edge of the road. This area is a potential widening of this narrow section.

At Mile 12.8 to 13.5 on both sides survey 150 feet from the edge of the road. This area is a potential widening of this narrow section.

At Mile 12.9 on the left side of the road is a parking area. This area will be greatly reduced to just a pullout. The parking area will be restored to a natural habitat. Seventy-five (75) feet outside the parking area and the parking area will be surveyed. The area of this location is 0.35 acres or 0. 14 hectares.

At Mile 14.6 to 14.8 on both sides survey 150 feet from the edge of the road. This area is a potential widening of this narrow section.

At Mile 16.9 to 17.1 on left side (northwest side) survey 150 feet from the edge of the road. This area is a potential construction of an entrance sign pullout. The area of this location is 4.12 acres or 1.67 hectares and ends at the boundary cattle guard.

As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.